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GAS JOURNAL

LIGHT • HEAT • POWER • BYE-PRODUCTS

[Founded in 1849 as the "Journal of Gas Lighting."]

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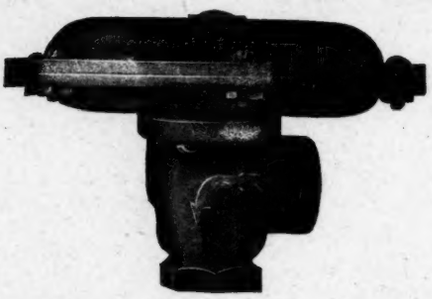

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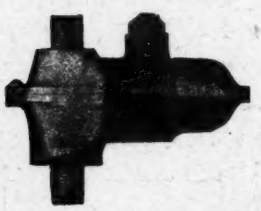

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VOL. CXLI., No. 2859.] TUESDAY, FEBRUARY 26, 1918. [70TH YEAR.

EDITORIAL NOTES.

The Competence and Authority of the National Gas Council.

THERE has probably never yet been an organization formed that was in such pink of perfection in regard to objects, procedure, authority, and so forth that all concerned in it could agree with it in every particular. The National Gas Council has had some critics in its initial development stages. It has done many things which have been of unquestionable advantage to the gas industry, and without the doing of some of which the industry would possibly have been in a much worse position than it is to-day. Let this not be forgotten when, in respect of a matter that is in a highly critical position for the gas industry generally, if not for every individual undertaking, Mr. Charles Carpenter, D.Sc., the Chairman of the South Metropolitan Gas Company, comes along and questions the competence and the authority of the Council to take any part in the discussion regarding the new phase of the wages problem that has of late come upon the industry with such unpleasant force. There would not be so much room for criticizing the attitude of our correspondent if he had been constructive instead of altogether destructive in his communication—if he had pointed out some practical alternative way of meeting the present emergency other than that each undertaking should retire into its own shell, and deal with its own employees individually. In other words, there is nothing for it but from first to last to negotiate this wages question in the old ways.

But the old ways are not the ways of these war times. There is in them the making of infinite chaos. There is combination on one side, insisting on certain—at any rate preliminary—action from the other side. But according to Mr. Carpenter, there is no competent body for even preliminary discussion or conference; and the industry itself cannot make the best use possible of the nearest approach to such a body that it now possesses. He is cautiously non-committal, excepting as to the one point—the want of competence or authority of the National Gas Council. "It "may or may not be necessary to have a Union or Federa- "tion of gas undertakings authorized to deal with labour "questions;" but [this later on] "for myself, even if it "were desirable, I see grave difficulties in setting-up "a 'Federation of Gas Undertakings' qualified to deal "with labour problems in all the gas-works of Great "Britain." So the industry is to be left drifting; and possibly have others legislating for it behind its back for want of representation in touch with what is going on. He also says: "It may be urged that it would not be politic to send a "*non possumus* to the request of the authorities." But again "my reply is that in this matter the Council cannot represent "the industry, and that it has neither mandate nor authority "to do so." What would be of extreme interest to his many readers would be to know whether or not our correspondent considers that it would be politic to send a *non possumus* to the authorities; and, if not politic, how he would comply with the request.

But, after all, is not our correspondent a little off the track in his assumption as to the position of the National Gas Council in this matter, and the length to which not they but the Committee appointed by the recent conference of representatives of gas undertakings are prepared to go in this discussion, not of terms as applying to individual gas undertakings, but of the propriety of the new demands, principles, and conditions, or anything else of a preliminary character? The Council are virtually in the position only of conveners. They convened the recent conference; and they are the channel through which further conferences can be called, for which, although the present wages demand applies generally to the whole industry, Mr. Carpenter makes no provision. The Council were approached by the Government Department dealing with such matters; and they were bound to consult the gas industry. A conference of the industry was arranged; and its largeness and its representative character were a complete ratification of the action of the Council. The conference—not the Council—appointed a Committee which, conveniently, is composed of the Executive Committee of the Council, two or three other prominent men in the industry, and three representatives of each of the District Gas Associations. It has, therefore, geographical representation; and it is representative solely of company and municipal gas undertakings. There is not on the Committee anyone representing "gas-stove foundries and meter- "makers' shops." At the conference, it was clearly understood that the Committee could not bind the industry in any way, but that they should merely act as a line of communication between the industrial base and the Government Department concerned in the demand of the National Federation of General Workers. What better could be done in the absence of a body set up purposely to act in such a matter as this? It was the most available course to take; it is a course that commits gas undertakings to nothing to which they do not individually agree. It is the course that, if we interpret our correspondent's letter correctly, is the one that should have completely fitted his views. For the administrators of gas undertakings are still left to do what in their wisdom they think is best; and yet they have not been so impolitic as to refuse to comply with the request of the authorities, and they are in touch, as they could not otherwise have been, with what is proceeding. Following this, the very advice that Mr. Carpenter says the Council should give its members—to settle with their own employees—is to all intents and purposes the attitude of the Council (or was at the recent conference), and so the penning of the letter was a little late. But before there is any question of settling, it may be worth while discussing whether there is anything to settle beyond what has already been done.

Considerations Facing a Joint Committee on Financial Relief.

LAST week we dealt with the attitude of local authorities not owning gas-works towards the measure of relief that gas companies are now seeking in respect of their sliding-scale conditions and maximum prices. It is not surprising to find among individual members of local authorities who have been called upon to decide whether or not they shall petition against and actively oppose the Bills that are being promoted in Parliament that they know very little of the essence of the question, although the knowledge is necessary to enable them to form a fair judgment as to whether or not there is justice in the claims of the companies. The incapacity through this want of knowledge is not in these circumstances made good by consulting an expert gas engineer and manager; for this is a matter upon which experts have pretty well made up their minds, and the major part of them recognize fully that it is justice that prefers this particular request, and that it is injustice that opposes. If town councillors are not qualified to judge this simple issue on their own account before determining on active opposition, then they are equally incompetent to determine whether or not they are taking the right course when accepting the advice of the expert whom they may consult, and which advice may be directly contrary to the opinion of other men

of equal, perhaps superior, professional standing. We know that some of the local authorities who are going to actively oppose would prefer that this question should be fought out entirely as one of principle—the principle of non-interference with a certain statutorily-framed condition of things, even though the whole of the substructure of the condition has been completely broken down by the war—and that the question of justice to capital should be kept hidden away in some dark corner, and not be brought before the tribunal appointed by Parliament to consider the matter. But justice is the ground on which the question is going to be contested—and justice not only to share and stock holders, but to the future of the undertakings, in which future the consumers are equally as interested as the share and stock holders. Because if, in the time to come, the undertakings are crippled as capital raisers through the untoward working of the sliding-scale in these days, and are forced to continue to raise capital at a high rate of interest, and perhaps at par or below, instead of at a premium, this would be to the distinct disadvantage of both consumers and capital holders, and an advantage to the municipal opponents who now run electricity undertakings in competition with privately owned gas enterprise. The public good demands that gas capital should not be depreciated through causes that are of such extraordinary character as those that exist at present. This is not by any means a petition for relief with only a single prop to support it.

As pointed out last week, the latest information is that the various Bills will probably be referred, in respect of this particular matter of financial relief, to a Joint Committee of both Houses of Parliament, who will consider the questions of justice and principle, and, if satisfied upon the former, will define the lines upon which Select Committees shall go in dealing with individual cases. That is what is expected as the result of the recent recommendation of the Chairmen of Committees. But beyond this, as intimated in last week's issue, the Rt. Hon. Sir D. F. Goddard rather thinks that an outcome of the discussion will be that some regulation in this regard will be evolved that will subsequently enable the Board of Trade to apply the decision to any deserving company—"deserving" because not all gas companies require relief, owing perhaps to generous treatment in respect of standard and maximum prices in times past, or may be to their conditions having enabled them before the war to sell gas at low prices, which have given them a good length to travel in the increase of charge before bringing down their dividends to the exiguous character of some of those now being paid. But if the reference to a Joint Committee includes the question of co-ordination of the suggested methods of relief to one standard form, there will be difficulty; for it is very clear from the Bills that individual promoters have their own views, for which they will fight with tenacity, as to the best way in which to meet the situation in respect of their own particular concern. At the same time, it must be admitted that variations of the form and the degree that relief should take mean complication which, for a temporary measure dealing with conditions weighted with war-produced influences, is undesirable and unnecessary; and variations would also reduce the facility of application by the Board of Trade in subsequent cases—if we may take Sir Daniel Goddard's remark as an indication of what is likely to happen.

Of course, while the Committee are at work, it may perhaps be considered possible to frame alternative methods of relief—based upon the two main lines suggested by the Bills for sliding-scale companies, so as to meet the views of promoters. But we should not envy the Committee their task, and the judicial care they would have to exercise. A difficulty at once offers itself in relation to the companies that seek for a change in their standard prices; and it is that, so far as can be seen, no definite and common prescription can be framed for them, but the amount by which the standard should be raised would have to be investigated for each concern, and, with the uncertainties prevailing, perhaps before long there would have to be a revival of the matter before the Board of Trade for a revision. No doubt this would be the fairer course for all concerned; and it would iron-out the inequalities in relief that must exist as between undertaking and undertaking with any prescribed uniform method of relief. On the other hand, the Board of Trade and other people have no time to fritter away in unnecessary inquiries; and there we have one of the strongest recommendations of the proposal of the National Gas Council, that proprietors should be given four-fifths of the difference between the dividend payable at the charge for gas prevailing before the war and that payable at the current price. But no one will suggest that this simple scheme would work out uniformly for all undertakings having regard to the dissimilarity of geographical and local circumstances, including the volume of business, the price charged before the war, and that charged now. There are many factors that will make it work out inharmoniously as between company and company. Take, for example, a gas company which has to pay for the carriage of seaborne coal (say) the equivalent of 1s. 6d. more per 1000 c.ft. of gas than before the war, and one that has only had a small increase owing to proximity to collieries—the latter will gain much more than the former. However, the National Gas Council plan was considered from the standpoint of simplicity the best that could be evolved, and the one that would give the least trouble as a temporary expedient. It will be for the Joint Committee, if agreed as to the justice of the companies' case, to determine as between the one method and the other. Though justice demands relief, we do not envy the Committee the work of decision. Determination as to whether or not justice demands revision should be a simpler matter. It will be for the promoters to show the proportion of their expenditure that is directly attributable to the war; it will be for the opponents to show, if they can, that this proportion of the expenditure has not completely disturbed the conditions upon which the terms of the sliding-scale were arranged.

In the manner in which the Bills deal with the question of relief, there is not (as may be seen from our recent review of them) complete harmony as to terms. The proposals of the National Gas Council are variously expressed—probably according to the ideas of the Parliamentary Agents. It is a pity that these were not formularized, so that the Joint Committee (if appointed) might have realized at a glance that they were dealing with the same method. Of course, where proposals are made as to increase of standard prices, the differences are due to the factors that come into consideration, and are individual to the applicant companies. A condition that will in all likelihood be made uniform will be that as to the period during which the revision shall apply. The length of the war is a problematical matter. The Bills variously suggest periods of one to five years, with such further term as the Board of Trade may think desirable in view of the continuance of extraordinary conditions as to costs, &c. It is certain the Board of Trade will not desire to be worried again over this matter directly there is a declaration of peace; and therefore a sufficiently long period should be allowed in the Bills before it will become necessary to prove to the Board a continuance of high costs that justify an extension of the period. Whichever method is adopted—the increase of standard price, or the four-fifths allowance—or whether both methods are to be adopted, the interests of the consumers will be amply protected, seeing that it will, as before, be to the advantage of share or stock holders for directors to reduce the charge for gas as quickly as possible, in order to augment the still deficient dividend.

If the anticipation as to the Joint Committee be correct, there is one thing upon which there ought to be some assurance; and it is that the Select Committees shall be instructed to follow the rulings of the Joint Committee, and not have a repetition of the abuse by such Committees that succeeded the recommendations of the Joint Committee on Residual Products, and made the work of that Committee something approaching a fiasco.

Post-War Cost of Materials.

ALTHOUGH there may be a fall in the price of materials immediately after the war, it will not be a great one, as the costs of their production will still be high, and the demand will probably be much in excess of the supply. In every direction, absorption will be great. There will be much new work to be undertaken, and the time will be protracted before reconstruction and renovation sink down to normal rate and level. At meetings of gas companies, one hears time and again of repairs and renewals being deferred, owing to the impossibility of getting the necessary labour and the materials. Such repairs and renewals as are now carried out are at high price, through the cost of labour and materials; and this is the explanation of the heavy sums that are charged for renewals and repairs, though, in the same breath, chairmen warn that large charges will have to be made when peace is restored, owing to the arrears that will

then have to supplement normal depreciation. It is hoped that a fair estimate is being made of the ravages which will have to be righted when the opportunity comes, and that commensurate charges are being made for the purpose against current working; for the after-war period will have its full burden to bear. It is no use, for example, talking to shareholders as some chairmen have done of deferred repairs being executed at cheaper rate after the war, owing to the expected improved conditions of the labour and the materials markets. There will then be a large demand for skilled labour; and, as already remarked, the consumption of materials will be immense not only for new construction, reconstruction, and repair, but by manufacturers who will want to replenish their exhausted stocks, and start-off in the great trade competition. It is true that there will be a considerable release of materials now absorbed by the war. All the same, there will be no lack of outlets for their utilization as produced; and so prices, it must be anticipated, will for some time run high.

The Ministry of Reconstruction realize this; and they have also discovered a problem which is of far-reaching importance, having regard to the resumption of trading activity after the war. Manufacturers are apprehensive of the result of providing themselves with materials at the present inflated prices for the resumption of peace time production on the full scale. Even a partial decline in prices immediately after the war would mean a loss on present purchases. Fear of this contingency—it is a very natural fear—is, the Ministry of Reconstruction are informed, tending to cause a reluctance on the part of some manufacturers and traders to acquire more materials in readiness for the coming of peace time than will do more than tide them over the contracts to which they are committed; and thus the preparation of articles for stock is being ignored. This is not economically good for the country; for directly the sea ways are again open, the commercial envoys of the Central Powers will be using them in search of the business which will help to rehabilitate the devastated fortunes of Germany and Austria. In those countries through which the German Armies have been passing, the industrial agents of the "Fatherland" have been almost on the heels of the forces, showing their wares and soliciting orders. They do not allow the grass to grow under their feet; and with them small business is better than none at all. An army of them will be sent throughout the world as soon as ever peace is declared. This country must be ready. Reconstruction must not be a chimera; it must be a reality. We must be there and everywhere ready to do business on the best possible terms. Therefore Dr. Addison has appointed a Committee on Financial Risks Attaching to the Holding of Trading Stocks. In this Committee the Society of British Gas Industries should be interested, and may have some views to lay before it. Mr. R. C. Smallwood, of the Ministry of Reconstruction, No. 2, Queen Anne's Gate Buildings, will be glad to hear from anyone representing trade interests who can put the Committee in possession of useful information for their study. The duty of the Committee will be to inquire and to report as to any measures which could be adopted with a view to secure that manufacturers should be financially in a position to hold stocks after the war, and that reasonable safeguards are established to prevent serious financial losses as a result of possible depression following on a period of great inflation in respect of stocks of materials required for industry. It is a big subject; but if out of it the Committee could do something to ensure the easing of the prices of materials for goods that will be required after the war, both manufacturers and home customers would be deeply grateful. There would, however, have to be some assurance that the benefit of this was shared between the home customers and the manufacturers.

Reconstruction and Fuel Supply.

THE address which Mr. E. Garsed delivered to the Yorkshire Junior Association last Saturday is a suggestive one in these times when the gas industry sees before it considerable opportunities to extend its operations and services. We are faced in the address with the inquiry as to whether all is being done that might be done to show the powers that be that the industry is worthy of consideration as (shall we say?) a key one in the great reconstruction that lies ahead. The "powers that be" appear to know very little of the practical side of many things. They have, for instance, exuberantly placed before them the remarkable regenerating capabilities of electricity, if the country will give it the opportunity. The "powers that be" decide to hold an inquiry, or rather two inquiries; and out of these comes the wonderful discovery that, in order to save coal, or to put coal to proper use, a new gas, coke, and other secondary products industry shall be constructed as the groundwork to electricity generation, as though a coal-carbonizing industry is not already in existence, and operating in every part of the kingdom. The powers that be applaud the marvellous discovery. They obviously want to be informed, as they do not appear to be aware of the fact, that such an industry is doing all that is needed in this way, and capable, with proper encouragement, of providing all the treated fuel that the electric industry requires. Is anyone giving them this information? Representatives of the National Gas Council, we know, were recently before the Board of Trade Committee on the Supply of Electrical Power, and urged closer relations between the gas and electricity industry in this matter of fuel provision and coal conservation. So far good; but that Committee has upon it electrical men who, for aught we know, may be strongly opposed to any such alliance, and may prefer that the electricity industry shall deal with its own fuel supply *ab initio*.

One at least of the members was upon the Sub-Committee of the Reconstruction Committee whose report lately issued contained a number of recommendations which were an open confession that coal is being, and has all along been, used wastefully, in the electricity supply industry, while there was no need whatever for it, as is well proved by Mr. E. W. L. Nicol in this month's issue of the British Commercial Gas Association's publication "A Thousand-and-One Uses for Gas." While the electricity industry has all along pursued uneconomical methods in coal use, it has had at the very entrances to its boiler-houses a fuel—mostly fixed carbon—only awaiting purchase from neighbouring gas-works. For everything that has badly affected the electricity industry, legislation has been blamed; its own innate shortcomings have had a blind eye turned upon them. Now electrical men desire to take refuge in the manufacturing processes of the gas industry. Mr. Garsed, while probably not surprised at this, naturally wants to know whether the claims of gas have been sufficiently placed before the Ministry of Reconstruction. He puts quite a number of questions, the answers to which it would be well for the Ministry to have before them. He cannot understand why the claims of gaseous energy should be overlooked; and why it should be considered necessary to convert it into yet another form of energy. Such conversion means a loss of thermal energy, and this loss is unnecessary for very many operations. These are matters that the gas industry realizes. Some of its advanced units are doing their part in bringing about a more general practical realization; and for an example, reference may be made to the electricity clauses in the South Suburban Gas Company's Bill, on which comment was made by Mr. Charles Hunt, at the meeting of the proprietors last Friday. Let the whole industry be on the move in this direction, for it is a direction in which the best economic interests of the country can be served. But it is very essential that the Ministry of Reconstruction should know this.

Coal and Coke Prices.

Information as to matters of current importance to the gas industry is brought up to date in the report of the Executive Committee of the National Gas Council, published in another column. Several of the questions are still in suspense; and it may be a little time yet before they reach a definite conclusion. Others have been disposed of—not in all cases to the satisfaction of the industry, though this result is not due to any lack of effort. The Coal Controller has proved himself a stoical masterpiece. He has been attacked from all quarters regarding the last 2s. 6d. added to the price of coal in consideration of the advance in miners' wages. But all get the one answer—that he is not prepared to make any alteration. The Coal Controller is himself now interested in seeing that the profits of the coal industry meet all the financial obligations that arise under the scheme embodied in the Coal Mines Control Act. We do not like the look of things in regard to the price of coal. There have been hints before from the Coal Controller's office that the last 2s. 6d. rise does not take into account other demands that have been made for an increase of the standard amount per ton. Now, in this report of the Executive Committee of the National Gas Council, we see

that the Coal Controller, in reply to a representation as to the unfairness of the 2s. 6d. increase in the price of coal in relation to coke contracts entered into prior to the imposition of the addition, stated that he has no power to make a surcharge, but he advises that in future coke contracts a protective clause should be inserted to allow of an increase in price "should the price of coal be raised again." Gas undertakings will be wise in adopting a coal clause not only in new coke contracts, but wherever possible in their large gas contracts. However, several gas undertakings have secured reductions of their contract prices for coal, through obtaining the ruling of the Coal Controller, where they have felt that they were being charged a price in excess of that authorized by the Coal Price (Limitation) Act. But those who require any assistance from the Controller must put him in possession of the whole of the facts in detail.

Inert Material and the Fuel Value of Coal.

The "Chemical Trade Journal," discussing the references recently made at gas companies' meetings to the question of inert material in coal, points out that the trouble is gravely affecting the operations of many chemical manufacturers, even those situated almost in the centre of the Lancashire coalfield. One of the largest firms in the country, for example, recently informed our contemporary that a certain operation which in normal times was completed in about eight hours now takes twelve hours. This is a 50 p.ct. increase in the expenditure of time, and, we take it, in the reduction of output in this particular work. Besides this for chemical manufacturers, there has no doubt been, through the same cause, a deterioration of the quality of some of the raw materials which are derived from the carbonization of coal. However, the situation, as our contemporary says, is economically very unsatisfactory. A mere monetary allowance to the consumer for the excess incombustible matter now charged up to him as coal would not by any means provide full amends. The piling-up of uneconomy through the want of cleansing begins at the pithead; and this is where waste and fruitless cost have their start. If full compensation had to be made for all this waste and fruitless cost, the colliery owners might as well give away the dirt-laden coal. Therefore, the best service the Coal Controller can render the entire nation is to ensure that his control extends to, and is made effective in respect of, the condition of which complaint is so freely made.

War Savings Appeal to Employers.

All employers are asked to make the first week in March a "red letter" one in patriotic endeavour among their employees. The National Gas Council are conveying, through our "Correspondence" columns, an appeal from the National War Savings Committee to employers in the gas industry asking them to do everything possible to promote the purchase of War Savings Certificates, more particularly on the instalment plan, where this has not been adopted. Throughout the country on the same day, at the same hour, it is desired that meetings should be held for the purpose of inaugurating a scheme. The details will be found in the letter referred to. A tremendous push should be made to get a big response, as the larger it is the more effective will be its reply to those Socialists and Pacifists who are trying to undermine the patriotism of the workers of the country, and to produce their defection from the great effort in the causes of the liberty of the world and honour among nations.

Cheapest Gas in the Metropolitan Area.

When presenting the accounts for the past six months at the half-yearly meeting of the Hornsey Gas Company, the Chairman (Mr. A. M. Paddon) had a good many satisfactory features to which to point. Not the least gratifying of these was the fact that the dividend was restored to its pre-war figure—of course, by a reduction in the price of gas. Indeed, the price of gas in the Company's district is now only 2d. per 1000 c.ft. in excess of what it was in 1914, before the outbreak of war. Glancing down the figures of the London and Suburban Companies, there appears to be no other total increase so small as this, though in the cases of the North Middlesex and the Lea Bridge Companies the extent has been only ¼d. per 1000 c.ft. There are, in fact, more instances in which the advance has been over 1s. than there are where it has been less than this figure. Many factors go to determine the price of gas in a particular district; but when all is said and done, it must be admitted that those responsible for the administration of the Hornsey Gas Company are entitled to hearty congratulation on the fact that they can claim, on behalf of so comparatively small an undertaking, that they are selling the cheapest gas in the whole of the Metropolitan area. Out of twelve Companies, Hornsey was fourth from the top in the matter of price in 1914; whereas now (with 2s. 11d. per 1000 c.ft.) it is the only Company with a charge of less than 3s. The claim of Mr. J. W. Buckley (the Engineer and General Manager), that he has attained his ambition to make the works one of the best-managed in the Metropolitan area, will certainly not be challenged, in the light of tangible results by either the consumers or the proprietors.

Coalite and Inquisitiveness.

Whatever may be the object of the "Coalite" articles in the "Financier," one result is being produced that was never intended. Those who mingle in technical circles find that the contents of the articles are giving rise to a good deal of laughter and derision. The resuscitation of previously published points, the straining to bring within the articles on the flimsiest of pretext the names of men of eminence as supporters of the low-temperature system, and the glorification of Coalite as though it was the only pebble worth consideration on the low-temperature beach have been noted, and technical sides have shaken. In our "Correspondence" columns "Nemo" is inquisitive. He wants some information not only as to the Coalite "system," but as to how it came about that His Majesty's Government were induced to invest £10,000 in the debentures of the Barnsley Smokeless Fuel Company, on whose advice they did it, what is the nature of the investigation made beforehand, and so forth. He hopes he may get the information, as this piece of speculation ought to rank with other follies that have been committed in high places in recent years. There is little chance of the hope being consummated. Government Departments do not give away very much as to the reasons for their doings; and they are not likely to infringe the rule of silence in this case. It is a satisfaction, however, that while someone was responsible for the advice to the Government that resulted in the speculation, someone, too, was responsible for advising them not to increase their commitments in this direction in view of the fact that they were not likely to obtain any requital in needed materials. The Government learned from expensively bought experience. Perhaps it is something to be thankful for that not more than £10,000 represented the initial plunge into this to the Government unknown region.

Extended "Summer Time."

It cannot be said that the gas industry has much to complain about over the putting forward of the clock by an hour during summer time. No doubt there is some loss of gas consumption for lighting; but in most cases there has been so much increased consumption for other purposes that the loss has not been missed, and, such as it has been, it has been welcomed, for demand under present circumstances has meant strenuous times for all concerned in the production of gas. There are few gas undertakings that are seeking for new business; they are quite content with that which flows in uninvited. However, there may be a little further relief this year, in view of the decision that has been arrived at to extend "Summer Time" by an additional five weeks. There is no question as to the popularity of the movement. People want more daylight hours in the summer. Sir George Cave stated, in the House of Commons last Wednesday, that he had received large numbers of representations urging that "Summer Time" should be begun earlier this year. This attests the popularity, and so did the cheers in the House when he added that he had decided that "Summer Time" should begin on Sunday, March 24, and continue until Sunday, Sept. 29.

Manchester District Institution of Gas Engineers.—The forty-eighth annual meeting of the Institution will take place next Friday, in the Midland Hotel, Manchester. The report and accounts and the reports of the Commercial Sections will be submitted; and the new President (Mr. J. P. Leather, of Burnley) will deliver his Inaugural Address.

Society of British Gas Industries.—The Council announce that the Right Hon. Lord Moulton, G.B.E., F.R.S., has accepted the presidency of the Society for the coming year. The annual general meeting will be held at the Trocadero Restaurant on Thursday, April 18. The programme of arrangements for the meeting will be announced later.

PERSONAL.

Mr. ROBERT A. BROWNING, of Neath, has been retained by the Haverfordwest Town Council to report upon their gas undertaking.

The minutes of the Salford Gas Committee state that Prof. HAROLD B. DIXON, M.A., Ph.D., F.R.S., has been appointed Gas Examiner, for testing the gas supplied to consumers in the out-districts of Eccles, Swinton, and Patricroft.

Major R. W. FORD, son of the late Mr. W. Ford, of Stockton-on-Tees, is, we learn from the "Canadian Gas Journal," now nearing convalescence from serious wounds sustained in the fighting in August last. Major Ford, who came over with the Canadians, was, prior to joining-up, the Manager to the Vancouver Gas Company.

After being 65 years in the service of the Plymouth and Stonehouse Gas Company, Mr. J. W. CORNISH retired last December, and was succeeded in the office of Works Cashier by Mr. S. A. CROKER, who has been with the Company for 36 years. Yesterday week there was a gathering of representatives of all departments of the undertaking, when, on behalf of the senior members of the staff, an illuminated address was presented to Mr. Cornish, as "a token of high esteem and record of appreciation of unfailing courtesy." Mr. Percy S. Hoyte (the Engineer and Manager) made the presentation.

We learn that Mr. C. W. TOZER and Mr. F. D. MARSHALL, who were at one time respectively Engineer and Director of the Premier Tarless Fuel Syndicate, have purchased the Battersea works and all vested interests, patents, &c., from the parent Syndicate, and have incorporated them in a new undertaking, the "Oil-Recovery Syndicate." We further understand that these gentlemen, who have devoted so much time, energy, and technical resource to low-temperature carbonization, have contracts settled to erect several large works in this country and abroad. We wish them the success which is due to their tenacity and perseverance.

Mr. J. J. MERRELL has been appointed to succeed Mr. T. Robinson as Engineer and Manager at the works of the Sutton-in-Ashfield Urban District Council. He has been for the past two years Resident Superintendent at the Hornsey Gas-Works. Mr. Merrell received his training at the Mossley Corporation Gas-Works, under his father, who was Engineer and Manager there for 25 years. From Mossley he went to the Sutton, Southcoates, and Drypool Gas Company, Hull; and from there to the South Shields Gas Company—first as Works Superintendent of their Jarrow station, and afterwards being appointed Superintendent of both the Shields and Jarrow works. This position he held for fourteen years, during which time both works were reconstructed, and an installation of Woodall-Duckham vertical retorts was erected. He is a member of the North of England Association.

OBITUARY.

JOHN HARPER PENNEY.

A LONG life of great usefulness was brought to a close by the death, on the 15th inst., after having been confined to his bed for two months, of Mr. John Harper Penney. He was born, lived, and died in South Shields, with the Gas Company of which town his whole professional career was spent—some 40 years, out of 51 years' service, in the position of Secretary. When Mr. Penney had been with them for fifty years, the Directors of the South Shields Gas Company, as a mark of esteem, presented him with a suitably inscribed silver salver and a cheque; and then when, at the beginning of 1917, ill-health compelled his retirement, the Board granted him a substantial pension. The remarks made on these occasions showed how high was the opinion entertained of his work; and in private life, and among his professional brethren, he was no less respected. Among the qualities which endeared him to those with whom he came in contact was a courteous and kindly disposition.

The North of England Gas Managers' Association owed much to Mr. Penney, who first acted as Auditor, and then successively became a member of the Committee, Vice-President, President, and Hon. Secretary and Treasurer. For five years he filled the office of Secretary; and on his retirement acknowledgment was made of his services by a handsome presentation. His successful efforts to secure lower insurance premiums for gas undertakings during the early days of the Workmen's Compensation Act, will be remembered with gratitude. In addition to his work for the North of England Association, he was for three years a member of the Committee of the Institution of Gas Engineers. He was keenly interested in Freemasonry.

The funeral took place at Harton Cemetery on Monday of last week. The South Shields Gas Company were represented by Mr. James Readhead, J.P. (Chairman), Mr. T. W. Wallis (Vice-Chairman), Colonel W. J. Dawson, Mr. Henry Chapman, Mr. W. A. Armstrong, Mr. J. H. Readhead (Directors), Mr. C. W. Newlands (Solicitor), Lieutenant-Colonel Robert Chapman, C.M.G., D.S.O. (Auditor), Mr. Thomas H. Duxbury (Engineer and General Manager), and Mr. A. Pickering (Secretary). There also attended Mr. Thomas Waddom (of Newcastle), Mr. Norman Cox (Secretary of the Sunderland Gas Company), and Mr. C. H. Armstrong (Secretary of the Walker and Wallsend Gas Company), who attended on behalf of the North of England Gas Managers Association.

Mr. Penney is survived by his wife and a grown-up family, with whom deep sympathy will be felt.

The death occurred on the 11th inst., at Stockport, in his sixtieth year, of Mr. JOHN RICHARD CLARKE, who for many years was an Alderman of the borough, and a consistently successful Chairman of the Corporation Gas Committee.

The death occurred very suddenly, at Hampstead, on Thursday last, of Mr. THOMAS TYRER, F.I.C. Deceased, who was 76 years of age, was Hon. Treasurer of the Society of Chemical Industry, of the London Section of which, in earlier days, he occupied the position of Secretary.

The death of Mr. RICHARD HENRY SAINSBURY, of Trowbridge, marks the close of a long life, honourably spent, so far as the business side is concerned, in the service of the gas industry, and the removal of a well-known and much respected personality among gas circles in the South-West of England. Although signs of infirmity due to advancing age had been evident for a considerable time, nothing serious was immediately anticipated; but he was stricken by a paralytic seizure on the 1st inst., and passed peacefully away on the 16th, without any return to consciousness, at the advanced age of 78. The funeral took place last Wednesday. Mr. Sainsbury entered the service of the British Gas Light Company at Trowbridge in 1856, and rapidly rose to the position of Engineer and Manager, which he occupied with credit to himself and advantage to the concern, until the time of his retirement in 1903 under the Company's age-limit regulations. He enjoyed the full esteem and confidence of both consumers and employees; and under his energetic supervision the concern entered upon the prosperous and healthy conditions that it continues still to enjoy. He was a member of the Institution of Gas Engineers and of the South West District Association, of which he occupied the Presidential Chair in 1888.

Masonic—Northern Star Lodge.

The Installation Meeting of the Northern Star Lodge, No. 3053, was held on Friday last, at the Midland Hotel, Manchester. As successor to W. Bro. John Bond, of Southport, Bro. John W. Morrison, of Sheffield, was installed W.M. for the ensuing year; and he afterwards appointed and invested the following officers:

W. Bro. J. Taylor, P.M. (Bolton)	S.W.
W. Bro. T. Ousey, P.M., P.Pr.G.Stwd. (Stalybridge)	J.W.
W. Bro. L. B. Taylor, P.M. (Dudley)	Chaplain.
W. Bro. Walter Whatmough, P.M. (Heywood)	Treasurer.
W. Bro. William Batt, P.M., P.Pr.G.S.D. (Ansdell)	Secretary.
W. Bro. J. W. Broadhead, P.M., P.Pr.G.S.D. (Elland)	D.C.
W. Bro. R. H. Garlick, P.M. (Salford)	S.D.
Bro. M. L. Williams (Stretford)	J.D.
Bro. H. G. Harrison (Ashbourne)	I.G.
W. Bro. John Fisher, P.M. (Ansdell)	A.D.C.
W. Bro. Jas. M'Ewen, P.M. (Manchester)	Assist. Secretary.
Bro. S. Shadbolt (South Bank)	Organist.
W. Bro. R. J. H. Sayers. P.M., P.Pr.A.G.D.C. (Manchester)	Almoner.
Bro. Ernest West (Alderley Edge)	Stewards.
Bro. P. D. Walmsley (Wombwell)	
Bro. Capt. F. W. Richmond (Birmingham)	
Bro. Jno. W. Turner (Birmingham)	
Bro. Chas. Fairweather (Kilmarnock)	
Bro. Jas. Bridge (Stretford)	
Bro. R. H. Brown (Birkenhead)	

Lodge Charity Representative:
W. Bro. Fred. J. West, P.M. (Manchester).

Subsequently, in the course of the dinner, an amount of more than £180 was raised on behalf of the East Lancashire Masonic Charities.

The Heavy Oil Engine Fuel Committee.—There has recently been appointed the Heavy Oil Engine Fuel Committee (composed mainly of the General Committee of the Diesel Engine Users' Association), to assist the Controller of Munitions Mineral Oil Productions in connection with the subject of fuel oil supplies and the use of tar oil as fuel in Diesel engines. The Hon. Secretary of the Committee is Mr. Percy Still, No. 19, Cadogan Gardens, S.W. 3.

Scottish Junior Gas Association (Western District).—An ordinary meeting of the Association was held on Saturday, in the Royal Technical College, Glasgow. At the outset, Mr. Alexander Wright, of Lockerbie (the President), intimated that the adjudicators on papers read had unanimously decided to award the first prize of the Association to Mr. W. Bennet, now of Lytham the second prize falling to Mr. Reginald Cross, of the Tradeston Chemical-Works. The President then called upon Mr. A. H. Whitelaw, of Walls Street, Glasgow, to read a paper entitled "Faults of Ordinary Meters." Pressure on our space, owing to other meetings which have to be reported, compels the postponement of any notice of Mr. Whitelaw's communication and the discussion to which it gave rise.

COMPARATIVE WORKING RESULTS OF THE THREE METROPOLITAN AND FOUR OF THE SUBURBAN GAS COMPANIES.

IN THE HALF YEAR ENDED DECEMBER 31, 1917.

Compiled by Mr. F. J. BRADFIELD, the Secretary of the Commercial Gas Company.

	Gas Light and Coke.	South Metropolitan.	Commercial.	Wandsworth.	South Suburban.	Tottenham.	Brentford.
	(Year's figures.)						(Year's figures.)
Gas sold . . . . . thousands	28,372,855	6,743,552	1,770,372	1,325,513	1,296,799	1,129,648	4,415,124
Increase . . . . . per cent.	5·88	7·35	1·35	5·90	18·88	Dec. ·15	12·60
Gas made per ton of coal carbonized cubic feet	11,971	12,318	12,630	12,256	11,810	12,078	11,717
„ „ per gallon of oil used . . „	694	..	1047	7288	2722	932	734
Gas unaccounted for . . . . . per cent.	8·42	7·93	8·90	7·48	10·54	10·48	7·77
Coke made for sale per ton of coal . cwt.	9·77	10·08	11·16	10·63	8·92	7 93	9·98
Tar made per ton of coal . . . . galls.	9·59	9·47	10·51	9·17	..	10·14	12·14
Liquor made per ton of coal . . . galls, 8 oz.	33·55	38·92	35·34	30·52	35·47	31·09	37·14
Percentage of coke used as fuel	19·00	18·14	14·17	14·94	29·47	34·41	20·20
Capital expended per 1000 cubic feet sold during the past year	s. d. 10 2·61	s. d. 7 11·90	s. d. 8 3·41	s. d. 7 7·14	s. d. 8 1·59	s. d. 9 1·41	s. d. 6 3·70
Price charged per 1000 cubic feet	2/8 to 3/4	3/1	3/2	2/6 to 3/10	3/1 to 4/3	3/4 and 3/9	2/10 to 4/2
Costs per 1000 Cubic Feet of Gas Sold.							
REVENUE ACCOUNTS.	d.	d.	d.	d.	d.	d.	d.
Coals, oil, &c.	29·38	32·76	31·84	30·88	29·81	27·94	27·73
Less residuals—Coke and breeze	11·30	12·83	10·70	12·19	9·79	6·39	6·86
Tar	2·94	3·25	2·52	2·94	1·51	1·59	1·96
Amm. liq. and sulph. amm.	2·65	2·68	2·40	1·99	2·32	1·19	1·50
Total residuals . .	16·89	18·76	15·62	17·12	13·62	9·17	10·32
Net for coals, oil, &c.	12·49	14·00	16·22	13·76	16·19	18·77	17·41
MANUFACTURE—							
Salaries	0·28	·78	·46	·41	·56	·32	0·43
Wages—carbonizing	2·68	2·77	2·16	2·22	1·67	2·77	1·74
Purification	0·28	·72	·18	·57	·21	·56	0 23
Repairs—plant	5·98	6·83	4·66	5·12	5·22	6·19*c*	4·60
Net manufacture .	21·71	25·10	23·68	22·08	23·85	28·61	24·41
DISTRIBUTION—							
Wages and salaries	1·24	1·05	1·05	1·28	1·38	·88	1·06
Repairs—Mains and services, &c.	1·85	1·12	1·33	1·53	1·61	1·96	1·13
„ Meters and prep. meters and fittings	1·63	2·09	2·20	·99	1·58	1·39	0 96
„ Stoves—ordinary and prepayment .	1·70	·74	1·73	1·13	2·59	1·19	1·53
Total net manufacture and distribution .	28·13	30·10	29·99	27·01	31·01	34·03	29·09
Public lamps—lighting and repairing	0·52	·71	·46	·50	·49	·13	0·27
Rents, rates, and taxes	3·20	1·62	2·37	1·14	1·88	1·16*d*	1·85
MANAGEMENT—							
Directors, Auditors, and salaries (Secretary, &c.)	0·24	·28	·35	·54	·68	·48	0·41
Collectors.	0·66	·87	1·00	·46	·50	·59	0·49
Stationery and general charges	0·27	·66	·53	·55	·38	·58	0·40
Profit-sharing	0·02	..	·20	·07	·09	..	..
Bad debts	0·07	·04	·04	·07	·02	·04	0·05
Law and parliamentary charges	0·05	·03	·02	·02	·19	·02	0·01
Superannuations, &c.	0·45	·52	·38	·27	·48	·56	0·44
National Insurance	0·07	·16	·08	·09	·07	·07	0 06
Active service allowances and war bonus . . .	0·15*a*	·26*a*	·50*a*	4·47	3·55	2·48	2·51
Sundries	0·03	·04	·01	·02	..	..	0·00
Total expenditure (*less* residuals) . .	33·86	35·29	35·93	35·21	39·34	40·14	35·58
GAS	37·85	35·94	35·87	35·98	38·85	39·87	36·34
Rentals—Meters and prep. meters and fittings	3·07	3·08	2·83	2·86	2·28	2·10	3·81
Stove	1·52	1·43	1·95	2·62	1·86	4·15	1·15
Incand. mantle maintenance . .	..	..	·10	·13	..	·04	..
Miscellaneous	0·13	·05	·00	·04	·06	·06	0·01
Total—Gas, rentals, &c.	42·57	40·50	40·75	41·63	43·05	46·22	41·31
Balance, being profit	8·71	5·21	4·82	6·42	3·71	6·08	5·73
Dividend and interest	8·98	7·04	7·56	6·60	5·78	6·04*e*	5·06
Surplus or deficit	Def. 0·27	Def. 1·83	Def. 2·74	Def. ·18	Def. 2·07	·04	0·67
Contributions to funds and sundry payments .	0·58*f*	·11*f*	..	..	..	..	0·09*f*
SUNDRIES.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Coals cost per ton	28 3·07	30 5·37	34 3·41	30 7·72	..	28 0·54	..
Coke realized per ton of coal	12 4·05	11 9·88	13 9·82	11 11·38	10 6·78	9 3·71	10 1·78
Coke „ „ of coke	25 2·93	23 5·51	24 9·24	22 5·69	23 8·29	23 5·57	20 4·07
					Per Yard.		
Breeze „ per ton	2 10·93	2 1·03	1 10·37	3 11·31	2 7·97*b*	0 11·81	7 0·27
Tar realized per gallon	0 4·15	0 3·83	0 3·84	0 3·60	0 2·02	0 2·78	0 2·72
Amm. liquor, &c., realized per butt (8 oz.) . .	9 7·41	6 10·80	8 9·66	7 2·47	7 9·10	6 0·93	6 7·04
Percentage of stoves at rental to consumers . .	90	103	76	99	112	72	100
Bad debts per cent. on total receipts	0·12	·06	·08	·12	·04	·08	0·09
Net profit per cent. on ordinary capital	3·54	2·44	2·05	4·74	2·28	4·14*g*	4·89
One penny variation equals in half year . . .	£118,220	£28,098	£7377	£5523	£5403	£4707	£18,396
Carburetted water gas, per cent. on total make . (Including Blue Gas, if any.)	20·12	..	27·69	9·56	20·62	39·80	41·51

a Active Service Allowances only.
b Per Yard.
c Including 0·42 to Renewal Fund.
d Rent and Rates only.
e Including 0·87 Income-Tax item.
f Cost of Writing down Investments.
g Including Electricity Results.

COMPARATIVE WORKING RESULTS OF THE THREE METROPOLITAN AND FOUR OF THE SUBURBAN GAS COMPANIES.

TABLE SHOWING THE VARIATION, INCREASE OR DECREASE, ON FIGURES OF CORRESPONDING HALF YEAR, 1916.

[The figures in heavy type show the decreases.]

Compiled by Mr. F. J. BRADFIELD, the Secretary of the Commercial Gas Company.

		Gas Light and Coke.	South Metropolitan.	Commercial.	Wandsworth.	South Suburban.	Tottenham.	Brentford.
		(Year's figures.)						(Year's figures.)
Gas sold	thousands	1,574 934	461,766	23,658	73,695	205,997	1686	125,575
Increase (variation equal to)	per cent.	4 22	6·33	**2·78**	1·99	12·75	326	9·50
Gas made per ton of coal carbonized	cubic feet	718	78	**1380**	**795**	**714**	**.97**	**304**
Gas made per gallon of oil used	,,	202	..	441	6,847	2143	464	223
Gas unaccounted for	per cent.	1·40	1·11	**66**	**·34**	**·27**	**1·18**	67
Coke made for sale per ton of coal	cwt.	**·08**	**·14**	**·05**	**·47**	**·47**	**·50**	**·28**
Tar made per ton of coal	galls.	**·20**	**·16**	**02**	**·37**	..	**·35**	**·85**
Liquor made per ton of coal	galls, 8 oz.	**1·78**	**·18**	**1·81**	**·01**	**2 32**	2·72	**·15**
Percentage of coke used as fuel		**1 09**	**·12**	**·43**	3·75	4·56	2·61	9·94
Capital expended per 1000 cubic feet sold during the past year		s. d. **0 8·46**	s. d. **0 7 05**	s. d. **0 1·72**	s. d. **0 1·96**	s. d. **1 3·86**	s. d. 0 2·84	s. d. **0 8·84**
Price charged per 1000 cubic feet†		0 4·00*	0 5·00	0 6·00	0 6 00 & 0 10·00	0 3·00	0 8·00	0 4·00 & 0 10·00
Costs per 1000 Cubic Feet of Gas Sold. REVENUE ACCOUNTS.		d.	d.	d.	d.	d.	d.	d.
Coals, oil, &c.		5·30	5·56	8·13	4·95	5·26	1·53	5·57
Less residuals—Coke and breeze		2 35	**·65**	2·11	**·43**	**·33**	**·44**	**·13**
Tar		**·14**	**·27**	1·21	1·02	**·07**	**·67**	**·72**
Amm. liq. and sulph. amm.		**·08**	**·83**	**·09**	**·00**	**·27**	**·23**	**·43**
Total residuals		2·57	**1·75**	3·41	1·45	**·13**	**·46**	1·28
Net for coals, oil, &c.		2·73	7·31	4·72	3·50	5 13	1·07	4·29
MANUFACTURE—								
Salaries		**·02**	**·11**	**·03**	**·00**	**·04**	**·00**	**·02**
Wages—carbonizing		**·59**	**·80**	**·41**	**·17**	**·27**	**·22**	**·18**
Purification		**·03**	**·29**	**·00**	**·28**	**·18**	**·10**	**·02**
Repairs—plant		**·46**	1·96	**·06**	1·21	**·61**	2·77	1·48
Net manufacture		3·79	10·25	5·10	5·16	5·79	4·16	5 95
DISTRIBUTION—								
Wages and salaries		**·04**	**·11**	**·15**	**·01**	**·22**	**·04**	**·10**
Repairs—Mains and services, &c.		**·11**	**·31**	**·44**	**·01**	**·24**	**·64**	**·10**
,, Meters and prep. meters and fittings		**·32**	**·37**	**·27**	**·12**	**·29**	**·12**	**·02**
,, Stoves—ordinary and prepayment		**·26**	**·54**	**·11**	**·27**	**·47**	**·05**	**·05**
Total net manufacture and distribution		3·14	9·88	6·07	5·01	4·57	4·79	5·88
Public lamps—lighting and repairing		**·03**	**·12**	**·05**	**·05**	**·00**	**·04**	**·07**
Rents, rates, and taxes		**·06**	**·16**	**·63**	**·15**	**·57**	**·15**	**·01**
MANAGEMENT—								
Directors, Auditors, and salaries (Secretary, &c.)		**·01**	**·00**	**·02**	**·03**	**·14**	**·01**	**·01**
Collectors		**·10**	**·20**	**·17**	**·04**	**·06**	**·12**	**·04**
Stationery and general charges		**·02**	**·16**	**·12**	**·11**	**·01**	**·03**	**·09**
Profit-sharing		**·06**	**·53**	**·13**	**·37**	**·15**	**·21**	..
Bad debts		**·03**	**·01**	**·00**	**·01**	**·01**	**·02**	**·00**
Law and parliamentary charges		**·04**	**·00**	**·01**	**·07**	**·19**	**·01**	**·01**
Superannuations, &c.		**·03**	**·14**	**·03**	**·09**	**·06**	**·17**	**·06**
National Insurance		**·01**	**·05**	**·00**	**·02**	**·00**	**·02**	**·00**
Active Service allowances and war bonus		01	**2 22**	**·10**	2·18	1·56	1·01	**·98**
Sundries		**01**	**·01**	**·01**	**·00**	..	..	**·00**
Total expenditure (*less* residuals)		3·21	7·02	6·82	6	5·29	5·76	6·79
GAS		2·62	4·78	5·22	8·08	6	8·11	6·28
Rentals—Meters and prep. meters and fittings		**·03**	**·24**	**·12**	**·12**	**·05**	**·02**	**·29**
Stove		**·03**	**·10**	**·02**	**02**	**·15**	**·14**	**·02**
Incand. mantle maintenance		..	..	**·00**	**·01**	..	**·01**	..
Miscellaneous		**·01**	**·01**	**·00**	**·03**	**·03**	**·00**	**·00**
Total—Gas, rentals, &c.		2 69	4 43	5·12	7·92	1·23	7 8	5·97
Balance, being profit		**·52**	**2·59**	**1·70**	**·99**	**4 06**	**2·22**	**·82**
Dividend and interest		**1·01**	**·49**	**61**	**·46**	**1·79**	1 44	**·86**
Surplus (variation equal to)		**·49**	**2·10**	**1 09**	1·45	**2·27**	**·78**	**·04**
Contributions to funds and sundry payments		**·49**	**·62**	..	**·26**	..	**·76**	**·09**
SUNDRIES.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Coals cost per ton		2 9·32	4 11·74	8 2·72	3 9·07	..	2 2·26	..
Coke realized per ton of coal		1 9·88	**0 8·85**	1 8·93	**0 2·39**	**0 3·72**	**0 2·63**	0 2·90
Coke ,, ,, of coke		3 10·61	**1 1·52**	3 2·83	0 7·08	0 6·23	0 10·24	1 0·41
Breeze ,, per ton		**2 7·02**	0 1·27	**2 2·43**	**1 0·83**	0 3·11	**0 10 34**	0 3·35
Tar realized per gallon		**0 0·13**	**0 0·28**	0 1·88	0 1·14	0 0·16	0 1·29	0 1·04
Amm. liquor, &c., realized per butt, 8 oz.		**0 2·26**	**2 2·07**	**0 10·53**	**0 6·38**	**0 9·38**	0 10·33	1 9·38
Percentage of stoves at rental to consumers		5	4	1	4	6	..	..
Bad debts per cent. on total receipts		**·06**	**·03**	**·01**	·00	**·01**	**·05**	**·03**
Net profit per cent. on ordinary capital		**·14**	**2·44**	**1·65**	**·38**	**2·72**	1·98	**·20**
One penny variation equals in half year		£6562	£1924	£99	£307	£858	**£7**	£2058
Carburetted water gas per cent. on total make (Including blue gas, if any.)		**2·17**	..	**·29**	**·10**	1·04	3·35	1·93

† These figures show the variation in price in the Companies' principal areas. * Last nine months of year.

COMPARATIVE WORKING RESULTS OF THE THREE METROPOLITAN AND FOUR OF THE SUBURBAN GAS COMPANIES.

IN THE HALF YEAR ENDED DECEMBER 31, 1917.

Compiled by Mr. F. J. BRADFIELD, the Secretary of the Commercial Gas Company.

—	Gas Light and Coke.	South Metropolitan.	Commercial.	Wandsworth.	South Suburban.	Tottenham.	Brentford.
	(Year's figures.)						(Year's figures.)
Gas sold . . . . . thousands	28,372,855	6,743,552	1,770,372	1,325,513	1,296,799	1,129,648	4,415,124
Increase . . . . . per cent.	5·88	7·35	1·35	5·90	18·88	Dec. ·15	12·60
Gas made per ton of coal carbonized cubic feet	11,971	12,318	12,630	12,256	11,810	12,078	11,717
„ „ per gallon of oil used . . „	694	..	1047	7288	2722	932	734
Gas unaccounted for . . . . . per cent.	8·42	7·93	8·90	7·48	10·54	10·48	7·77
Coke made for sale per ton of coal . cwt.	9·77	10·08	11·16	10·63	8·92	7 93	9·98
Tar made per ton of coal . . . . galls.	9·59	9·47	10·51	9·17	..	10·14	12·14
Liquor made per ton of coal . . . galls, 8 oz.	33·55	38·92	35·34	30·52	35·47	31·09	37·14
Percentage of coke used as fuel	19·00	18·14	14·17	14·94	29·47	34·41	20·20
Capital expended per 1000 cubic feet sold during the past year	s. d. 10 2·61	s. d. 7 11·90	s. d. 8 3·41	s. d. 7 7·14	s. d. 8 1·59	s. d. 9 1·41	s. d. 6 3·70
Price charged per 1000 cubic feet	2/8 to 3/4	3/1	3/2	2/6 to 3/10	3/1 to 4/3	3/4 and 3/9	2/10 to 4/2
Costs per 1000 Cubic Feet of Gas Sold.							
REVENUE ACCOUNTS.	d.	d.	d.	d.	d.	d.	d.
Coals, oil, &c.	29·38	32·76	31·84	30·88	29·81	27·94	27·73
Less residuals—Coke and breeze	11·30	12·83	10·70	12·19	9·79	6·39	6·86
Tar	2·94	3·25	2·52	2·94	1·51	1·59	1·96
Amm. liq. and sulph. amm.	2·65	2·68	2·40	1·99	2·32	1·19	1·50
Total residuals . .	16·89	18·76	15·62	17·12	13·62	9·17	10·32
Net for coals, oil, &c.	12·49	14·00	16·22	13·76	16·19	18·77	17·41
MANUFACTURE—							
Salaries	0·28	·78	·46	·41	·56	·32	0·43
Wages—carbonizing	2·68	2·77	2·16	2·22	1·67	2·77	1·74
Purification	0·28	·72	·18	·57	·21	·56	0·23
Repairs—plant	5·98	6·83	4·66	5·12	5·22	6·19*c*	4·60
Net manufacture .	21·71	25·10	23·68	22·08	23·85	28·61	24·41
DISTRIBUTION—							
Wages and salaries	1·24	1·05	1·05	1·28	1·38	·88	1·06
Repairs—Mains and services, &c. . . .	1·85	1·12	1·33	1·53	1·61	1·96	1·13
„ Meters and prep. meters and fittings	1·63	2·09	2·20	·99	1·58	1·39	0 96
„ Stoves—ordinary and prepayment .	1·70	·74	1·73	1·13	2·59	1·19	1·53
Total net manufacture and distribution .	28·13	30·10	29·99	27·01	31·01	34·03	29·09
Public lamps—lighting and repairing . . .	0·52	·71	·46	·50	·49	·13	0·27
Rents, rates, and taxes	3·20	1·62	2·37	1·14	1·88	1·16*d*	1·85
MANAGEMENT—							
Directors, Auditors, and salaries (Secretary, &c.)	0·24	·28	·35	·54	·68	·48	0·41
Collectors.	0·66	·87	1·00	·46	·50	·59	0·49
Stationery and general charges	0·27	·66	·53	·55	·38	·58	0·40
Profit-sharing	0·02	..	·20	·07	·09	..	..
Bad debts	0·07	·04	·04	·07	·02	·04	0·05
Law and parliamentary charges	0·05	·03	·02	·02	·19	·02	0·01
Superannuations, &c.	0·45	·52	·38	·27	·48	·56	0·44
National Insurance	0·07	·16	·08	·09	·07	·07	0 06
Active service allowances and war bonus . .	0·15*a*	·26*a*	·50*a*	4·47	3·55	2·48	2·51
Sundries	0·03	·04	·01	·02	..	..	0·00
Total expenditure (*less* residuals) . .	33·86	35·29	35·93	35·21	39·34	40·14	35·58
GAS	37·85	35·94	35·87	35·98	38·85	39·87	36·34
Rentals—Meters and prep. meters and fittings	3·07	3·08	2·83	2·86	2·28	2·10	3·81
Stove	1·52	1·43	1·95	2·62	1·86	4·15	1·15
Incand. mantle maintenance . .	..	..	·10	·13	..	·04	..
Miscellaneous	0·13	·05	·00	·04	·06	·06	0·01
Total—Gas, rentals, &c.	42·57	40·50	40·75	41·63	43·05	46·22	41·31
Balance, being profit	8·71	5·21	4·82	6·42	3·71	6·08	5·73
Dividend and interest	8·98	7·04	7·56	6·60	5·78	6·04*e*	5·06
Surplus or deficit	Def. 0·27	Def. 1·83	Def. 2·74	Def. ·18	Def. 2·07	·04	0·67
Contributions to funds and sundry payments .	0·58*f*	·11*f*	..	..	..	..	0·09*f*
SUNDRIES.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Coals cost per ton	28 3·07	30 5·37	34 3·41	30 7·72	..	28 0·54	..
Coke realized per ton of coal	12 4·05	11 9·88	13 9·82	11 11·38	10 6·78	9 3·71	10 1·78
Coke „ „ of coke	25 2·93	23 5·51	24 9·24	22 5·69	23 8·29	23 5·57	20 4·07
					Per Yard.		
Breeze „ per ton	2 10·93	2 1·03	1 10·37	3 11·31	2 7·97*b*	0 11·81	7 0·27
Tar realized per gallon	0 4·15	0 3·83	0 3·84	0 3·60	0 2·02	0 2·78	0 2·72
Amm. liquor, &c., realized per butt (8 oz.) . .	9 7·41	6 10·80	8 9·66	7 2·47	7 9·10	6 0·93	6 7·04
Percentage of stoves at rental to consumers . .	90	103	76	99	112	72	100
Bad debts per cent. on total receipts	0·12	·06	·08	·12	·04	·08	0·09
Net profit per cent. on ordinary capital . . .	3·54	2·44	2·05	4·74	2·28	4·14*g*	4·89
One penny variation equals in half year . . .	£118,220	£28,098	£7377	£5523	£5403	£4707	£18,396
Carburetted water gas, per cent. on total make . (Including Blue Gas, if any.)	20·12	..	27·69	9·56	20·62	39·80	41·51

a Active Service Allowances only.
b Per Yard.
c Including 0·42 to Renewal Fund.
d Rent and Rates only.
e Including 0·87 Income-Tax item.
f Cost of Writing down Investments.
g Including Electricity Results.

COMPARATIVE WORKING RESULTS OF THE THREE METROPOLITAN AND FOUR OF THE SUBURBAN GAS COMPANIES.

TABLE SHOWING THE VARIATION, INCREASE OR DECREASE, ON FIGURES OF CORRESPONDING HALF YEAR, 1916.

[The figures in heavy type show the decreases.]

Compiled by Mr. F. J. BRADFIELD, the Secretary of the Commercial Gas Company.

	Gas Light and Coke.	South Metropolitan.	Commercial.	Wandsworth.	South Suburban.	Tottenham.	Brentford.
	Year's figures.)						(Year's figures.)
Gas sold . . . . . thousands	1,574 934	461,766	23,658	73,695	205,997	1686	125,575
Increase (variation equal to) . . . per cent.	4·22	6·33	**2·78**	1·99	12·75	326	9·50
Gas made per ton of coal carbonized. cubic feet	**718**	78	**1380**	**795**	**714**	**597**	**304**
Gas made per gallon of oil used. . . ,,	·202	..	441	6,847	2143	464	223
Gas unaccounted for . . . . . per cent.	1·40	1·11	**66**	·34	·27	**1·18**	67
Coke made for sale per ton of coal . cwt.	**·08**	**·14**	**·05**	**·47**	**·47**	**·50**	**·28**
Tar made per ton of coal . . . . galls.	**·20**	**·16**	**02**	·37	..	**·35**	·85
Liquor made per ton of coal . . . galls, 8 oz.	**1·78**	**·18**	**1·81**	·01	**2 32**	2·72	·15
Percentage of coke used as fuel	**1·09**	**·12**	·43	3·75	4·56	2·61	9·94
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Capital expended per 1000 cubic feet sold during the past year	**0 8·46**	**0 7 05**	**0 1·72**	**0 1·96**	**1 3·86**	o 2·84	**0 8·84**
Price charged per 1000 cubic feet†	o 4·00*	o 5·00	o 6·00	o 6 00 & o 10·00	o 3·00	o 8·00	o 4·00 & o 10·00
Costs per 1000 Cubic Feet of Gas Sold. REVENUE ACCOUNTS.	d.	d.	d.	d.	d.	d.	d.
Coals, oil, &c.	5·30	5·56	8·13	4·95	5·26	1·53	5·57
Less residuals—Coke and breeze	2 35	**·65**	2·11	·43	·33	**·44**	**·13**
Tar	**·14**	**·27**	1·21	1·02	**·07**	**·67**	**·72**
Amm. liq. and sulph. amm.	**·08**	**·83**	**·09**	**·00**	**·27**	**·23**	**·43**
Total residuals . .	2·57	**1·75**	3·41	1·45	**·13**	**·46**	1·28
Net for coals, oil, &c.	2·73	7·31	4·72	3·50	5 13	1·07	4·29
MANUFACTURE—							
Salaries	**·02**	**·11**	**·03**	**·00**	**·04**	**·00**	**·02**
Wages—carbonizing	**·59**	**·80**	**·41**	**·17**	**·27**	**·22**	**·18**
Purification	**·03**	**·29**	**·00**	**·28**	**·18**	**·10**	**·02**
Repairs—plant	**·46**	1·96	**·06**	1·21	**·61**	2·77	1·48
Net manufacture . .	3·79	10·25	5·10	5·16	5·79	4·16	5 95
DISTRIBUTION—							
Wages and salaries	**·04**	**·11**	**·15**	**·01**	**·22**	**·04**	**·10**
Repairs—Mains and services, &c. . . .	**·11**	**·31**	**·44**	**·01**	**·24**	**·64**	**·10**
,, Meters and prep. meters and fittings	**·32**	**·37**	**·27**	**·12**	**·29**	**·12**	**·02**
,, Stoves—ordinary and prepayment .	**·26**	**·54**	**·11**	**·27**	**·47**	**·05**	**·05**
Total net manufacture and distribution	3·14	9·88	6·07	5·01	4·57	4·79	5·88
Public lamps—lighting and repairing	**·03**	**·12**	**·05**	**·05**	**·00**	**·04**	**·07**
Rents, rates, and taxes	**·06**	**·16**	**·63**	**·15**	**·57**	**·15**	**·01**
MANAGEMENT—							
Directors, Auditors, and salaries (Secretary, &c.)	**·01**	**·00**	**·02**	**·03**	**·14**	**01**	**·01**
Collectors	**·10**	**·20**	**·17**	**·04**	**·06**	**·12**	**·04**
Stationery and general charges	**·02**	**·16**	**·12**	**·11**	**·01**	**·03**	**·09**
Profit-sharing	**·06**	**·53**	**·13**	**·37**	**·15**	**·21**	..
Bad debts	**·03**	**·01**	**·00**	**·01**	**·01**	**·02**	**·00**
Law and parliamentary charges	**·04**	**·00**	**·01**	**·07**	**·19**	**·01**	**·01**
Superannuations, &c.	**·03**	**·14**	**·03**	**·09**	**·06**	**·17**	**·06**
National Insurance	**·01**	**·05**	**·00**	**·02**	**·00**	**·02**	**·00**
Active Service allowances and war bonus . . .	**01**	**2 22**	**·10**	**2·18**	**1·56**	**1·01**	**·98**
Sundries	**01**	**·01**	**·01**	**·00**	..	..	**·00**
Total expenditure (*less* residuals) . .	3·21	7·02	6 82	6 93	5·29	5·76	6·79
GAS	2·62	4·78	5·22	8·08	1·46	8·11	6·28
Rentals—Meters and prep. meters and fittings	**·03**	**·24**	**·12**	**·12**	**·05**	**·02**	**·29**
Stove	**·03**	**·10**	**·02**	**02**	**·15**	**·14**	**·02**
Incand. mantle maintenance . . .	..	..	**·00**	**·01**	..	**·01**	..
Miscellaneous	**·01**	**·01**	**·00**	**·03**	**·03**	**·00**	**·00**
Total—Gas, rentals, &c.	2 69	4 43	5·12	7·92	1·23	7 98	5·97
Balance, being profit	**·52**	**2·59**	**1·70**	**·99**	**4 06**	**2·22**	**·82**
Dividend and interest	**1·01**	**·49**	**61**	**·46**	**1·79**	1 44	**·86**
Surplus (variation equal to)	**·49**	**2·10**	**1 09**	1·45	**2 27**	**·78**	**·04**
Contributions to funds and sundry payments .	**·49**	**·62**	..	**·26**	..	**·76**	**·09**
SUNDRIES.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Coals cost per ton	2 9·32	4 11·74	8 2·72	3 9·07	..	2 2·26	..
Coke realized per ton of coal	1 9·88	**0 8·85**	1 8·93	**0 2·39**	**0 3·72**	**0 2·63**	o 2·90
Coke ,, ,, of coke	3 10·61	**1 1·52**	3 2·83	o 7·08	o 6·23	o 10·24	1 0·41
Breeze ,, per ton	**2 7·02**	o 1·27	**2 2·43**	**1 0·83**	o 3·11	**0 10 34**	o 3·35
Tar realized per gallon	**0 0·13**	**0 0·28**	o 1·88	o 1·14	o 0·16	o 1·29	o 1·04
Amm. liquor, &c., realized per butt, 8 oz. . .	**0 2·26**	**2 2·07**	**0 10·53**	**0 6·38**	**0 9·38**	o 10·33	1 9·38
Percentage of stoves at rental to consumers .	5	4	1	4	6	..	..
Bad debts per cent. on total receipts	**·06**	**·03**	**·01**	·00	**·01**	**·05**	**·03**
Net profit per cent. on ordinary capital . . .	**·14**	**2·44**	**1·65**	**·38**	**2·72**	**1·98**	**·20**
One penny variation equals in half year . . .	£6562	£1924	£99	£307	£858	**£7**	£2058
Carburetted water gas per cent. on total make . (Including blue gas, if any.)	**2·17**	..	**·29**	**·10**	1·04	3·35	1·93

† These figures show the variation in price in the Companies' principal areas. * Last nine months of year.

NATIONAL GAS COUNCIL OF GREAT BRITAIN AND IRELAND.

Report of the Executive Committee.

WE have received from the National Gas Council the following report prepared by the Executive Committee.

1.—COAL.

(*a*) *The Coal (Pit's Mouth) Prices Order*, 1917.—This Order, dated Oct. 12, 1917, imposed a further increase of 2s. 6d. per ton on coal, for purposes other than domestic, dispatched from collieries on and after Sept. 17, 1917; thus making the increase retrospective. Gas undertakings were thus placed in a very difficult position. The price of gas for the Christmas quarter had been fixed before the publication of the Order, and there was no way of making a charge for this additional expense until the following (March) quarter. An extra loss in working has therefore had to be shown in many cases.

The Council were advised by the Controller of Coal Mines that this increase in price applied also to any arrears in deliveries which existed on September, 1917. This point was to have been contested in the Law Courts; but it is now learned that the gas undertaking promoting the action withdrew it.

Upon the publication of the Order, the Council immediately took up the matter with the Controller of Coal Mines, and asked that a deputation from the Council might wait upon him. The Controller replied that he did not think a deputation would serve any useful purpose at the time. It is understood that similar applications from other sources have also been unsuccessful.

The Committee are glad to be able to report that applications by the managers of gas undertakings to the Controller of Coal Mines for his ruling, in cases where there is cause to believe that the contractors are not abiding by the terms of the Price of Coal (Limitation) Act, have been successful; and in many cases the contract price has been reduced. It is important to remember in this connection that the whole of the facts in detail must be submitted to the Controller if his assistance is desired.

The Wales and Monmouthshire District Institution of Gas Engineers and Managers sent a deputation to the Controller of Coal Mines on Jan. 15, to urge the removal of the extra 2s. 6d. per ton on the price of coal. [This represents the extra amount imposed by the Board of Trade in the districts of South Wales and Monmouthshire and the Forest of Dean in June, 1916, in accordance with the powers given to the Board under the Price of Coal (Limitation) Act, 1915]. The application of the Institution was supported by Members of Parliament, and several instances were quoted of hardships suffered by gas undertakings as a consequence of the additional 2s. 6d. per ton, especially in view of the poor value of the coal for gas-making. The Controller of Coal Mines did not hold out much hope of the order being removed, but promised to report the views of the deputation to the President of the Board of Trade.

2.—COKE CONTRACTS.

The price of coal under the Coal (Pit's Mouth) Prices Order, 1917, has had a prejudicial effect upon the profits derived from coke contracts made prior to the date of the Order. The London Coke Committee have been in communication with the Controller of Coal Mines regarding the possibility of making a surcharge on all such contracts. The Controller replied that he had no power to authorize a surcharge, and that such a course would be impossible, as similar claims in respect of other commodities would be bound to follow. He suggested that in making future contracts for coke a protective clause should be inserted in order to allow an increase in price should the price of coal be raised again.

3.—GAS.

(*a*) *Gas (Standard of Calorific Power) Act*, 1916.—It has been recommended to the Council by Mr. Fred J. West that a Bill should be promoted in Parliament to provide for all gas companies working to a calorific instead of an illuminating power standard. Such procedure was considered inadvisable at the present time, in view of the investigations now being undertaken by the Fuel Research Board, and it was pointed out that individual companies could secure the necessary alteration upon application to the Board of Trade for an Order under the Gas (Standard of Calorific Power) Act, 1916.

(*b*) *Composition, Quality, and Pressure of Gas.*—The necessity having arisen for an interim report upon this subject to be presented to the Fuel Research Board, it has been arranged that the Institution of Gas Engineers should send representatives to interview Sir George Beilby on the subject, and that the four constituent bodies should submit their respective reports to the Council as soon as possible, in order that they may be combined and submitted to the Fuel Research Board.

(*c*) *Gas as Fuel for Motor Vehicles.*—(i) A Conference of members of the British Commercial Gas Association and others has been held in reference to the use of gas as a fuel for motor vehicles, including the use of compressed gas for this purpose. A scheme for the guidance of the gas industry is being prepared by the British Commercial Gas Association, and will be circulated in due course. (ii) By the Motor Spirit (Consolidation) and Gas Restriction Order, 1918, which took effect as from Jan. 10, 1918, the use of gas for motor vehicles was restricted in the same way as that of petrol in regard to the purpose for which vehicles may be used, but not as to quantity. It will now be necessary for the user to obtain a licence before being granted a supply. While it is not legally incumbent upon the supplier of gas to see that the licence is produced each time gas is supplied for this purpose, the Board of Trade will welcome the assistance of the industry in seeing that the order is obeyed.

(*d*) *Substitution of Electricity for Gas by Military Authorities.*—The Council were advised that the Chepstow Gas Company had fitted up the malthouse in their neighbourhood, now utilized as barracks, with gas lighting, and that the military authorities had afterwards adopted electric lighting in substitution for gas. The Council, at the instance of the Wales and Monmouthshire District Institution of Gas Engineers, approached the War Office on the matter, pointing out the waste of time and labour involved in duplicating supplies for lighting, and stating that the substitution of electricity was directly contrary to the recommendation of the Government—that gas should be used wherever possible in view of the great value of its bye-products. A reply was received from the Department of the Director-General of Movements and Railways of the War Office that, while the directorate is most anxious to carry out the wishes of the Government as regards gas consumption, it is incumbent upon them to be guided by the recommendations of the Army Medical Authorities, at whose request the substitution was effected, on account of the constructional peculiarities of the building referred to. The Department further pointed out that arrangements were being made for heating the Headquarters Offices at Chepstow with gas.

4.—LABOUR.

(*a*) *Winter Labour and Priority.*—The Committee have been represented at conferences with the Ministries of National Service and Munitions respectively and the Reserved Occupations Committee of the Board of Trade, with regard to the difficulty of obtaining labour sufficient for the winter requirements of the gas industry, and the inability to secure effective priority for machinery to enable undertakings to carry out their obligations with smaller staffs. The Committee are glad to report that their efforts here have been successful in obtaining the delivery of labour-saving machinery in several instances, but in very few has the necessary labour been supplied.

(*b*) *Schedule of Protected Occupations.*—The revised Schedule of Protected Occupations, issued recently, indicates that the Government authorities fully realize the necessity for adeqnate protection being afforded to the industry at the present time.

(*c*) *Employment of Women.*—The extension of the employment of women in gas-works having become imperative in view of the demand for additional men for H.M. Forces, the Council considered the advisability of issuing to the industry generally a *brochure* illustrating the kinds of work upon which it had been found that women can be engaged successfully. In order that the appeal to assist the country in this way might be made as strong as possible, the Council approached the Ministry of National Service, suggesting that the publication might be issued jointly by that Department and the Council. The Council ultimately accepted an offer by Mr. F. W. Goodenough, on behalf of the British Commercial Gas Association, to issue a special number of "A Thousand and One Uses for Gas," dealing with the subject; and it is hoped to circulate copies to all undertakings at an early date.

(*d*) *Leaving Certificates.*—The Executive Committee have obtained details of the deleterious effect upon the gas industry of the withdrawal of the provisions in the Munitions of War Acts relating to leaving certificates; and this information has been laid before the Government Departments concerned—the Board of Trade and the Ministry of Munitions.

(*e*) *Wages.*—The question of wages is receiving the careful attention of the Council.

(*g*) *Employment of Discharged Soldiers and Sailors.*—A deputation from the Council recently waited upon the Ministry of Labour, having been invited to discuss the possibility of employing in gas-works men discharged from H.M. Forces. The deputation pointed out that the first duty of gas undertakings would be to reinstate in their employment, wherever possible, their own men who had returned from active service. Apart from such re-employment, the best opening for discharged men would probably be in the meter and stove branch of the industry, where men could be trained in periods varying from a few months to three years, according to the degree of skill the particular work required. The Ministry stated that during the latter part of January 1000 men would be ready for employment, and, if the gas industry approved, would be directed by the Labour Exchanges to apply for work connected with the gas industry. A question having been raised whether a man's State pension would be affected by the rate of pay he received, the Ministry replied that wages were to be rated according to capability, and no regard was to be given to the amount of pension.

5.—PRIORITY.

The Council have been approached by the Society of British Gas Industries for assistance in obtaining priority for sheet and rod metal for making and repairing burners and lamps; and it is proposed that the Society shall prepare a case, and the Council shall submit it to the Ministry of Munitions.

6.—FINANCIAL HARDSHIPS.

(*a*) *Negotiations with Board of Trade.*—At the conclusion of the interview of a deputation of the Council with the Board of Trade

on Oct. 24, the President of the Board suggested the formation of a small Sub-Committee to whom the Board could refer without calling every member included in the deputation. At a meeting of the Financial Hardships Committee held Oct. 30, the following gentlemen were appointed to represent the different sections of the industry: Mr. J. R. H. Jacobs, to represent Maximum Price Companies. Alderman F. S. Phillips to represent Local Authorities. Mr. Thomas Waddom, to represent Sliding Scale Companies. Mr. D. Milne Watson in his capacity as Chairman of the Financial Hardships Committee.

(*b*) *Promotion of Private Bills.*—An emergency meeting of the Executive Committee was called on Nov. 16 last, in view of the information received to the effect that certain gas undertakings proposed to promote Bills in Parliament containing clauses relating to financial relief. The Chairman, having drawn the attention of the Board of Trade to the matter, was able to report that this action would not prejudice the Board's endeavour to render assistance to the gas industry. As the time for lodging notices of Bills was then very limited, the Committee decided to communicate by telegram with as many gas undertakings as possible, indicating the position and suggesting the promotion of separate Bills wherever possible. The very short period remaining in which to take action prevented the Committee from communicating with the entire industry.

The Council have no powers to promote a Bill on behalf of the industry; and it is understood that the rules of the House of Commons are opposed to joint Bills of the description necessary in this instance. But the Committee have reason for hoping that the Board of Trade will use their influence to obtain some form of general inquiry into the matter, with the object of securing relief for serious cases of hardship. It is hoped that the Board may be able to secure discussion of all the Private Bills by a Select Parliamentary Committee before they go forward for their second reading.

The Council have written to certain undertakings requesting information regarding the percentage of increase in the cost of labour, materials, and the prices received for residuals, &c. This information will be used to support the industry's case before the Special Parliamentary Committee.

7.—Benzol.

In response to the Council's application to the Ministry of Munitions for an increase in the price of benzol supplied to the Government by gas undertakings, the Ministry have issued a notice announcing a bonus of 2d. per gallon on benzol made in non-Government plants, which it is proposed shall be paid as an experiment.

8.—Tar.

(*a*) *Sale of Tar to Distillers.*—The proposed scheme for the sale of tar by producers to distillers has now been agreed, so far as the scale for determining the price is concerned, between the Sub-Committees appointed by the two parties. But the settlement of other details is still under negotiation. As soon as the whole scheme has been definitely agreed, it is proposed to communicate with the industry and ascertain to what extent gas undertakings are desirous of availing themselves of the proposals.

(*b*) *Dehydrated Tar.*—The Committee have been in negotiation with the Ministry of Munitions regarding this matter, and are informed that the question of the quantity of tar available for road-making is now under discussion by the Government Departments, and that a decision as to the quantity to be allocated is likely to be reached shortly.

The Road Board will decide which roads are most urgently in need of the tar. At the present time it is impossible to indicate in which districts the demand by local authorities for dehydrated tar will be less than in previous years, and consequently the plants which will be affected by the reduced requirements. It is understood that the amount required for road purposes will be very substantial.

9.—Sulphate of Ammonia.

Proposed Advisory Committee in Connection with the Ministry of Munitions.—The Committee have received a request from the Ministry of Munitions for the Council to nominate a technical expert who could be invited to serve on the Advisory Committee appointed with the object of increasing the available supplies of ammonia and of eliminating avoidable losses in the interests both of agriculture and of the manufacture of munitions. Similar invitations have been sent to the Association of British Chemical Manufacturers, the Scottish Mineral Oils Association, the Coke Oven Managers' Association, and the Sulphate of Ammonia Association. The Committee suggested Mr. Samuel Glover as the representative of the Council; and they are pleased to report that Mr. Glover has agreed to act in this capacity.

10.—Utilization of Fuel Resources.

The Chairman of the Executive Committee was asked at short notice to give evidence before the Board of Trade Electric Power Supply Committee.

The President of the Council and the Chairman of the Executive Committee both appeared before the Electric Committee and urged co-operation between electric and gas interests.

It was pointed out that gas undertakings, with their long experience, were particularly well qualified to undertake the work of carbonizing coal, recovering its bye-products, and supplying heat units to electrical undertakings for steam raising; and that the proposed setting up of entirely new carbonizing plants, to be worked by electrical undertakings, would be an unnecessary expense when so much capital is already invested in similar plant belonging to gas undertakings.

11.—Industrial Reconstruction Council.

The Executive Committee have had before them the rules of the Industrial Reconstruction Council. It is proposed to watch the progress of the movement on behalf of the industry.

12.—Scottish Gas Council.

The Scottish Gas Council has now been formed for dealing with all gas matters particularly affecting Scotland; and in order that co-operation with this Council may be more readily attained, the Executive has asked the Scottish Council to nominate two of their members for co-option on the Executive Committee of the National Gas Council.

14.—Co-Option on Executive Committee of Representatives of District Gas Associations.

The Committee are grateful to the various Associations for their co-operation; and the assistance and advice of their representatives at the meetings have proved a great help.

Mr. Thomas Berridge.

The Executive Committee are glad to be able to report that Mr. Thomas Berridge, who has been ill for so long a time, has now recovered, although he is as yet unable to resume his attendance at meetings in London. Meanwhile, the Committee are much indebted to Mr. Thomas Hardie, of Newcastle, for acting in Mr. Berridge's stead.

ELECTRICITY SUPPLY MEMORANDA.

The electricity journals are showing not a little interest in certain passages in the address of Mr. John Miles, the Governor of the Gas Light and Coke Company, to the proprietors at their meeting the other week. It will be remembered that the Governor pointed out that the future supply of electricity in this country was being made the subject of inquiry by various Government Committees. He expressed the opinion that there is no reason why there should not be co-operation between the gas and electricity industries, as well as the conviction that such co-operation would be very much to the benefit of the public. The electrical papers have been quoting these remarks. They are interested. At one time electricity saturated men sneered at the prospect of any business relations between the two industries. They pause now, arrested by the frequent and persistent references that there are to the subject; and they wonder as to whether or not there is anything in it more than was formerly apparent to their jaundiced eyes. They see, too, there is some connection between the inquiries that are taking place into electricity supply and the work that the Board of Fuel Research have in hand. What at one time of day appeared to be merely chimerical, may now be on the move—even though still in the embryonic state—to taking positive form. "Electrical Industries" comments on the remarks of Mr. Miles. It finds that similar statements have been made from the electrical side by Mr. Wordingham and others; and they undoubtedly appeal to the "get-together" sentiment that is now fashionable. But our contemporary complains that it has not yet come across any definite suggestion as to how co-operation is to be established. It thinks the initiative ought to come from the gas undertakings; and urges that Mr. Miles should go a little further, and indicate how his peace without annexation or indemnities can be accomplished.

Co-Operation between Commercial Rivals.

Considerations.

There is no need for Mr. Miles to do so if the writer in our contemporary will exert himself a little bit, and go to an electricity generating station where gas coke is being used in a proper manner for steam-raising. Following this, he should pay a visit to a gas-works, and see the potential heating energy of the incandescent coke that is being discharged from the retorts of some individual works in its hundreds of tons per day, and ask himself what this would mean if utilized direct for steam-raising for the generation *in situ* of electricity. Upon top of this, he might consider the nature of the work of the Board of Fuel Research, which includes the question of how best to further the cause of fuel economy, and make the most lucrative use of our coal resources—not for the gas or electricity supply industry only, but for all industries that require heat and power, and the many derivatives of coal carbonization. Fuel economy does not mean favouritism to any one industry; it has to take into account the national interests in their entirety. Piecing these things together, there is no need to ask Mr. Miles to go a little further, or to explain anything. There is something far more definite in business relations between the gas and electricity industries than there is in those huge castles in the air which start at the carbonization of coal and the generation of electricity at the pit-head, and end with the conversion of the existing electricity undertakings into mere media for the sale of electrical energy—no one knowing anything about the

costs of all this, or whether the capital expenditure (if known) would be justified, and whether the additional carbonization of coal would be a commercial success, in view of the fact that the markets for the secondary products of coal carbonization are already well satisfied, and will be still more so with the expansion of the gas business and the turning of the remaining beehive ovens into bye-product ones. However, we may look for better appreciation of these things by the continued investigation on both sides of the line dividing the large pit-head schemes (about which nobody has any very settled ideas) and business co-operation in the matter of fuel supplies with the gas industry. Misfortunes are supposed to draw people together with the bonds of mutual sympathy. Some electrical people find the war misfortunes of the gas and electricity industries are of common origin and type, in respect of coal, labour, and many other things. Perhaps this fact will assist to break down the truth of this statement in "Electrical Industries:" "The difficulties of getting the electric supply undertakings to co-operate are so troublesome that constructive statesmanship appears to have no reserve for the ancillary problem of combination with the gas interests." If an adequate survey of the whole position is taken as it applies to the two industries—one of which has a Board of Trade Committee considering its future, and both in respect of fuel supply under investigation by the Board of Fuel Research—there will be more enlightenment than by probing about in one direction, as though no other has existence.

The Flat Charge per Week.

Writing last week on the subject of the supply of electricity to small property, reference was made to various methods of doing this in order to save capital charges. One was the dispensing with meters and charging on a flat basis per burner or period of time, which generally fails, owing to the encouragement it gives to consumers disregarding any distinction between *meum et tuum*, and which disregard makes most unprofitable consumers of them. An illustration comes from Skelton and Brotton. The Electrical Engineer has reported to the Council that a majority of the consumers pay for current on a flat-rate basis of so much per week, which he finds operates to the disadvantage of both the consumers and the Council. We can well understand this. It is clear why it operates to the disadvantage of the Council; and when some consumers get more value than that to which they are entitled for their money, it follows that the other consumers are under a disadvantage. Therefore the Electrical Engineer submitted that, if all the consumers paid by meter, both they and the Council would benefit. The Council are of like opinion; and so the consumers in future will pay according to the registrations of meters, and not so much per week without any control over their consumption of current. It is the old tale and the old experience; but the managements of some electricity concerns like to gain confirmation of the tale by experience on their own account. They generally succeed in coming to the same conclusion.

Suggested Increase of Maximum Prices.

An incidental remark in an article in "Electrical Industries" suggests that the gas industry is not alone in seeking financial relief at the hands of the Government. The article in question discusses the Coal Controller's recent appeal for economy in gas and electric lighting with the view of saving coal; and its last lines are that "Mr. Calthrop ought to lend his stimulus to the other department of the Board of Trade which is giving its attention to the raising of the statutory maximum in electricity tariffs." This looks as though both industries are in the same boat in asking for assistance, which is not surprising, as many electricity undertakings have already put up their tariffs 30 to 50 p.ct. since the war started, and so a good number must have got to, or near to, their maximum prices. A few electricity undertakings some time ago applied for, and obtained, an increase of maximum prices; and so perhaps we have here an indication of a somewhat more general movement to the same end.

Light and Coal Saving.

However, to Mr. Calthrop's appeal. Our contemporary thinks it is not in the least likely that this single appeal will have any effect in reducing consumption for lighting purposes; and, in its opinion, if there is any real necessity for limiting people to a bare sufficiency of light, Mr. Calthrop ought to do more than merely draw attention to the subject. We recently discussed the question from the point of view of the gas industry [see Feb. 12, p. 284], and then indicated various ways in which the Coal Controller could better effect a saving of carriage for coal (for conveyance is the real trouble) than by trying to do so through gas lighting. As a matter of fact, the increase in the consumption of gas during the war has not been due to lighting, but to heating and cooking and industrial uses, which mean that coal has been displaced by gas, and the coal put to more profitable use *viâ* the retorts of gas-works, where a greater thermal and profitable efficiency is secured than in any other quarter. Our contemporary regards the advice to use every electric switch sparingly as a curious inversion of what is wanted. We are not so sure of that. In its opinion, the public should be further educated in the switch-off habit; but the facility for switching-on is as great as the facility for switching-off. Our observation is that the habit of switching-on and leaving on has greater prevalence than that of switching-off. The public wants to be educated into the habit of not switching-on unnecessarily; it is a habit which the very facility helps to grow. But price tells; and the high charges that are now being made for both gas and electricity will carry an economizing influence of a more material order than any appeal of the Coal Controller to use this indirect means of economizing in coal, and so effecting a saving in ship tonnage and the quantity carried by rail. More saving could be realized in these directions by cleaning the coal at the pithead of useless and deleterious substances; and this patent fact must be hammered in by both the gas and electricity industries. They would be very glad to have the opportunity of increasing the efficiency of their plants, and lowering the cost of production by such simple means, if the Coal Controller will only compel the cleansing of the coal, and stop the fleecing of large coal consumers, the terrible waste, and the consequent unnecessary claims upon transport.

Some Candid Statements.

The "Electrician" has kindly published a longer report than we had before seen of the discussion that took place, at the Manchester Section of the Institution of Electrical Engineers, on Mr. W. A. Gillott's paper upon "Electric Cooking as Applied to Large Kitchens"—a paper to which reference has been previously made in the "Memoranda." There was some candid talking on the occasion, which no amount of bluff will remove. One speaker gave it as his opinion that the present low rates for cooking purposes might have to be revised if electric cooking-stoves were generally adopted, inasmuch as the load in a good many cases coincided with the peak load, which was undesirable from the central station engineer's point of view. There is not the slightest doubt about this—in some neighbourhoods. For business people and many workers the light lunch is becoming more and more the vogue, and the substantial hot meal of the day is when the members of the family are all assembled at home in the evening. In other words, the late dinner habit is penetrating downwards in the social scale. Another speaker said that most breakdowns in the past had no doubt been due to wiring faults and resulting troubles between terminal wires. Perhaps "most" is the correct term; but there are people who have experienced troubles with electric-cookers (but do so no longer through returning to reliable gas), who attribute their troubles to other and varied causes. In this connection, there was a trace of sarcasm in the observation of one speaker that he could not help wondering where the work of the electrical engineer finished and that of the chef began in connection with electric cooking apparatus. This speaker also brought up the question of boiling water by electricity. In his view, it is not a commercial proposition with current at above ½d. per unit. As costs for mostly everything will keep up for some time to come, the ½d. per unit for general purposes is something that, while longed for, must not be expected. A further speaker was even more emphatic. His view was that it is "quite wrong," so far as could be seen to-day, to expect to boil water in any quantity electrically. He also informed his hearers that in fish-frying it is essential to bring the fat to a very high temperature before the fish is plunged into it, and with electric heating it takes a long time to bring the fat to the required temperature. "Water-boiling and fish-frying are, therefore, outside the range of practical politics with the electrical kitchen to-day. He also charged the boiling-plate with being the least efficient part of the electric cooking apparatus; and yet more work is done on the boiling-plate than in the oven! These are views of practical electrical men on some of the deficiencies of electric cooking apparatus. We have known and heard of users who are more emphatic in their denunciations—one of them being the wife of an electrical engineer.

Producer Gas Plant Success.—In a lecture before the Royal Dublin Society, on the prospects of Irish industries after the war, Mr. George Fletcher, of the Irish Department of Agriculture and Technical Instruction, mentioned that producer plant could be modified so as to gasify air-dried peat; and he indicated the success that had attended a producer gas plant at a works at Portadown. The installation of this plant had, the lecturer said, been attended by strikingly beneficial commercial results, though the peat had to be brought 12 or 13 miles from the bog where it was hand-cut.

The Gas Industry and Motor Fuel.—Considering the probable demand for gasolene and petrol for motor purposes after the war, Mr. J. E. Bullard, writing to the "American Gas Engineering Journal," says the extraction of gasolene from natural gas, and the "cracking" of heavy oils, have considerably increased the production; but neither of these processes can be extended beyond certain limits, and it will be necessary to look to bituminous coal as an additional source. The quantity of this mineral now being raised represented about a million gallons of crude benzol per annum, which could be used for the preparation of motor fuel, to say nothing of the gas; and gas companies should realize the magnitude of the market that will be opened up, and make full and immediate preparation, if they are to reap the full benefit. A combination of the oil and coal interests would meet the demand for many years, and stave off the need for considering substitutes, such as alcohol. But it turns upon the attitude taken by the gas industry towards the problem. There was an enormous field open which would drift off to other industries, if not cultivated at once.

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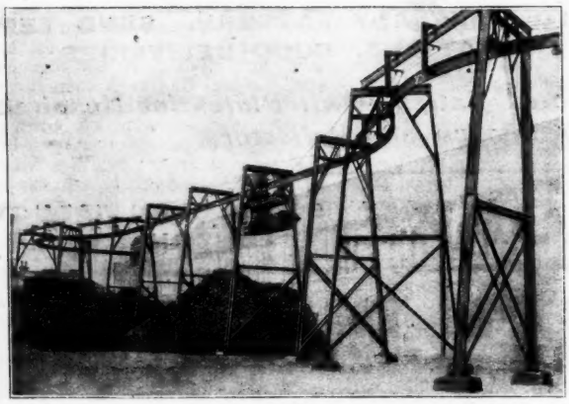

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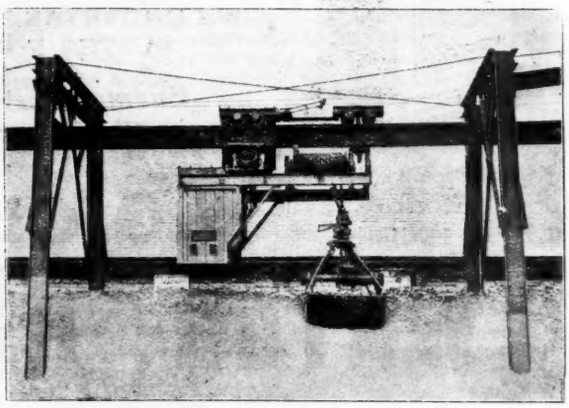

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RELATIVE VALUES OF CRUDE NAPHTHAS.

By "D. W."

THE writer has carried out a considerable number of tests on lines similar to those adopted by Messrs. Haigh and Lamb in their paper read before the Midland Section of the Coke-Oven Managers' Association on Jan. 26 [*ante*, p. 201], and his results confirm the conclusions of these two workers.

The strength (percentage distilling by retort-test below 120° C., corrected) of samples of crude naphtha from any one plant—assuming the coal carbonized to be fairly constant in quality—varies regularly with the percentage of creosote in the samples, and a continuous curve may be drawn to indicate this. The creosote may be considered as the sole variable component of the crude naphtha from a given plant—*i.e.*, the fraction boiling below 200° C. is of constant composition. A relative value curve may be drawn, based upon these principles.

These conclusions are, however, only valid when the plant is working efficiently and under control. If any circumstances—such as a rise in the percentage at 200° C. of the debenzolized oil or a high temperature of the gas or oil in the scrubbers—cause a loss of benzol past the latter, the creosote ceases to be the only variable. Otherwise, such curves as that of Haigh and Lamb are justified by the work to be described. Also it must be understood that the relative value curve given by the latter applies only to naphthas made at their plant at Barnsley Main, but that, as they remark, "a similar agreement could be found for any other make" by carrying out an equally broad series of tests.

The tests were carried out under conditions similar to those of Haigh and Lamb; corrections for barometric pressure being made, and thermometers employed which had been standardized for the depth of immersion in the benzol vapours. The creosote/strength curve was tested by distilling off in a fractionating apparatus the portion boiling below 200° C., corrected, from several crude naphthas of various strengths. The two portions thus separated were mixed in various proportions; and 100 cc. of each mixture was retested by the retort-test. The following is an example of the results.

The distillate below 200° C. from a 58 p.ct. naphtha was mixed with the residue (creosote) in the proportions of—

1. 60 cc. of distillate and 40 c.c. of residue. This mixture tested 37 p.ct. at 120° C. by the retort; the curve giving a strength of 37·5 p.ct. for a naphtha containing 40 p.ct. of creosote.
2. 73·2 cc. of distillate and 26·8 cc. of residue. The product tested 51 p.ct.; whereas the curve gives 50 p.ct.
3. 83 cc. of distillate and 17 cc. of residue. The observed strength of this mixture was 65 p.ct.—the same as that given by the curve.

In no case tested was the difference between the figure observed and that obtained from the curve more than 1·5 p.ct.; so that these results may be considered as establishing the validity of the creosote/strength curve, and therefore of the relative value curve, which is simply derived from the first.

Haigh and Lamb remark: "Experience shows that, in a benzol produced from any particular coal, the proportions of these constituents (benzene, toluene, and xylene) do not vary sufficiently to materially influence the retort-test result." Results obtained by the writer confirm this statement sufficiently satisfactorily. The distillate (fractionated) below 200° C., obtained from several naphthas of strength varying from 45 to 65 p.ct., were subjected, under similar conditions, to a fractional distillation. Up to 55 p.ct. the distillation curves (the percentage distillate/temperature) were all practically identical; while beyond this the divergence was in no case more than 3 p.ct. at any temperature up to 150° C. Above this, under the conditions, it was difficult to follow the operation by means of a curve. Mr. Thorpe, of Barugh, objected to this assumption by Haigh and Lamb, on the grounds of fractional absorption in the scrubbers; but it has already been stated that none of the conclusions of Haigh and Lamb have been verified by the writer under such conditions that benzol is being lost in the scrubbers—these being the only occasions when fractional absorption can influence the composition of the naphtha.

The following table gives the values, relative to 65's, of various strengths made at the plant under consideration.

65·0 p.ct. at 120° C.	1·000
60·0 " " "	0·956
55·0 " " "	0·928
50·0 " " "	0·880
45·0 " " "	0·804
40·0 " " "	0·728

These figures were obtained, in the same way as those of Haigh and Lamb, from the creosote percentage at 120° curve. That the two series of relative values do not agree is due to the fact that the still producing the writer's samples is not provided with a dephlegmator. No two plants will give identical relative value curves, unless they are similar in detail, are worked in a similar manner, and use the same coal.

The curve obtained by plotting the figures in this table shows no relations between naphthas of various strengths as regards composition, but merely gives the equivalent yields. No retort-test results can give the composition of a crude naphtha more than very approximately. And herein lies the advantage of replacing the retort-test entirely by side-arm and fractionation tests. The flask-test can fully serve the purpose of the retort-test, at the same time giving one an excellent indication of the three main constituents of the naphtha. It is also more easily carried out under specified conditions, as indicated by the fact that different workers can get much better agreement with the flask than with the retort.

Mr. Millington, discussing Haigh and Lamb's paper, remarks that the result of a washing-test must in some way be incorporated in a relative value chart. But, for the purpose of finding relative values, as already defined, this has no influence on the results. In the case of a complete evaluation, the washing loss is, of course, of primary importance; and in this connection a circumstance noticed by the writer is of interest. When a crude naphtha is washed, substances (indenes, &c.) boiling at about 160° to 180° C. are condensed by concentrated sulphuric acid to resins which are soluble in the naphtha and which boil at high temperatures of between 300° and 450° C. Whether the washing-test is performed either before or after the removal the creosote has thus an important bearing upon the results of the evaluation, as in the former case a considerable part of the washing loss is reported as creosote. In many cases these resins, which form the major portion of the residue in the rectified product still, are run into circulation with the creosote; but it will be found that, though low in specific gravity, they are very viscous, and have a deleterious action on the absorption by, and the cooling of, the creosote.

Finally, it may be mentioned that even when the crude naphtha yield of each plant has been reduced to the equivalent volume of its own 65's, a general comparison with other works is not possible, as 65 p.ct. naphthas made at one plant are often vastly different products from the 65's produced at another.

SIXTY YEARS AGO.

From the "Journal" for February, 1858.

Blaming the Gas-Meter.—Of the grievances which gas consumers often fancy they suffer from the companies who supply them, there is none more common than an imaginary fraudulent registry of the meters. They burn the gas lavishly; they enjoy the luxury of abundance of light; and everything goes pleasantly until the day of reckoning arrives, and then, when the gas consumed comes to be noted and charged for, they exclaim at the quantity, and declare that the meter must be wrong. They listen eagerly to any who will support this delusion; and an agitator who wishes to get up a public complaint against a gas company cannot do so more readily than by calling in question the fairness of the meters. The hubbub that was raised in Liverpool against the Gas Company had its principal foundation in the charge that they were cheating the consumers in the measurement of the gas. The case got up by the agitators charged the Company with complicity in the use of incorrect measures. Fraudulent dealers manufactured, and compelled their customers to buy, instruments for indicating the quantity consumed, which were so contrived and so managed by their servants as to give short measure; and thus the inhabitants of Liverpool were represented as being defrauded—there was no telling how much—by this disreputable juggle. The Town Council took the matter up, a Committee on Gas Supply was appointed, the Inspector of Meters for the Corporation of London was engaged, the venerable inventor of gas-meters was summoned, many gas consumers (who had been charged more than they liked to pay) were examined, the Company were threatened with deprivation of the management of their own affairs and with competition, and a series of meetings, reports, letters, charges, and recriminations ensued. The result of all this was the appointment, with the expressed wish of the Company, of a local Inspector of Meters, paid by the Corporation, who has now reported that the number of incorrect meters out of 4246 which he examined was one; and this one is proved to have been an unfinished one sent to be tested by mistake, and registering against the Gas Company! This is the sum total—the beginning and the end—of the great Liverpool gas movement.

Oxide Purification Patents.—The actions brought by Mr. F. C. Hills against the London Gas Company for alleged infringements of his patents for the purification of gas by the peroxide of iron, have been suspended, and a fresh action brought in the Court of Queen's Bench against the Equitable Gas Company for similar infringements. We are informed that another action has also been commenced against the lessee of the Brentford Gas-Works, making the fourth action brought ostensibly for the purpose of trying a question which might have been settled by one action, but apparently for the purpose of frightening the weak into paying royalties while the semblance of a right to them still exists.

Residuals for Agriculture.—We would request our readers to assist us in some investigations we have lately commenced upon the use of the residual products of gas making in agriculture. The question is little studied among practical men, especially in country districts; and yet the application of these products, in the manner alluded to, would materially affect the prosperity of all country gas-works.

YORKSHIRE JUNIOR GAS ASSOCIATION.

Mr. E. GARSED, the President of the Yorkshire Junior Gas Association, delivered his presidential address on Saturday last, at the Leeds Institute. There was a good attendance of the members.

PRESIDENTIAL ADDRESS.

After referring to the importance of the gas industry as a national asset, Mr. Garsed went on to say that a few points in the report of the Sub-Committee relative to Coal Conservation might perhaps not be out of place. Out of 190 million tons reserved for home consumption in 1913, there is specific mention of the amount used by gas-works, which is put at 18 million tons; while there is no specific mention of the amount used by electrical generating plants, which seems rather remarkable in view of the fact that the report is so closely associated with electricity supply. The remainder is consumed in other industrial channels and for private uses. But in the report from which I have taken figures, he said, a total home consumption of 211 million tons is compiled, not 190 millions. This makes the gas-works proportion 8½ p.ct. only, as compared with 9½ p.ct. if the 190 millions is correct. The difference is of small moment, however. The main point is that the modest 8½ p.ct., or whatever it is, can show, to begin with, a return of practically 50 p.ct. of cost in recovered products; while the country has had, out of the same small parcel, by far the greater proportion of its artificial light provided, and, to say the least, a very appreciable percentage of its requirements of heat and power.

A section of the report is devoted to centralized production, and suggests that, "as the requirements of the individual factories and other users do not coincide in time, the load is more regular," and also that "the more the load is pooled the more is the plant occupied." It is well to be guarded in what I say here. But I cannot clearly see the great force of this argument; for we are all well aware that through day and night throughout the year there will always be varying demands, and whether power be electricity, gas, or steam, the manufacture of it will always necessitate a safe limit of idle plant, and whether manufactured by individualistic or collective methods, this safe limit surely cannot be greatly reduced. We cannot make something out of nothing; and it may be possible that the claim is made as an offset to the difficulties attendant on the storage of electricity. But here, again, I speak reservedly.

The report states that electricity is "too dear," and expresses the opinion that legislation is somewhat responsible. The truth, however, is (and the report indirectly acknowledges it) that the root of the matter is the uneconomical methods of production, through the wrong use of coal. And so we say again, let the claims of our industry be fully considered, and rather than seek to displace it (if there be any tendency after all in this direction), let it co-operate in its present firmly established conditions towards the country's requirements of electricity, and it will be found to provide one of the most serviceable means of attaining the end in view. Certain of the "powers that be," however, have recently been "looking into matters somewhat" in this direction, and it is something that the question of coal conservation is at last under review; for, as we all know, the nucleus of the scheme of operations on a grand scale for the provision of national electricity is in being.

COAL CONSERVATION.

It is somewhat strange, is it not? that the question of coal conservation has been allowed to assume such a close relationship with a scheme which at the outset suggests the conversion of coal into gaseous fuel, and then proceeds to convert the latter into electrical energy in something of a manner which seeks to overlook or over-ride the proved existence of the possibilities of gaseous energy itself, and which almost treats the latter as being quite a side-line or secondary consideration. Is nothing being done to put the claims of gas before the Ministry of Reconstruction?

Reconstruction is a mighty question, and is truly most vital as regards the conservation of coal; and we cannot think that such a scheme is finite, or that any Commission will conclude that this is the only practical means of attaining the desired object. What has been submitted to those concerned as to what can be done, and is being done, with coal, in quantities increasing year by year, by capital already laid out? Has not the existence of coal carbonizing plant in nearly every corner of the country been pointed out? Are those engaged on the question not yet convinced of what gas can do for the community—that, in general, it can do all that electrical energy can do; and that, moreover, where the latter is required (and we do not hold that there is no room for it) gas is already waiting to be converted to that seemingly more desirable form of energy?

These points are raised with a view to arresting, if possible, any indifference which might be displayed by us of the gas industry, in reference to the proposed scheme of national electricity. When the coal of this country is held-up as being somewhat equivalent to the great water power of America, it is surely up to the gas industry to see that it is not overlooked in the matter of how the stored-up energy of coal shall be best developed and placed at the disposal of the nation.

More gas from our coal, gas of such composition as best serves the requirements of the community, cheaper gas, the recovery of more bye-products or the actual manufacture at our works of refined products, uniform pressure at the points of consumption, standardization of the component parts of appliances, with a complete ban of all second-rate fittings, are matters requiring much further investigation.

Every branch of the industrial world is at the moment deeply conscious of the urgent necessity of mapping-out the best means to meet the future requirements and arrangements concerning the applications of labour and its just and equitable reward. Many highly experienced business minds have expressed themselves as to what they consider best to be done with and for those who have their labour to sell; and we are confronted with matters such as shorter working hours, establishment of better understanding between employer and employed, abolition of malingering, levelling-up of work or a more equal sharing-out of duties, limitation of profits, &c. The claims of labour can never again be thrust into the background, and will, therefore, have to be faced squarely, and fully considered in their true light and worth by the employer. The first desirable condition of things is, undoubtedly, the establishment of confidence, mutual and satisfactorily certain. And it seems to me that both employer and employed can make rigid self-examination; for as soon as the one ceases to exploit the other, so soon will that mutual confidence begin to exist. The next important desirable end is the equalizing of the work to be done; and this is where labour, if it is equitable, can best strive to adjust matters.

CARBONIZATION SCHEMES.

As to making the harder work easier, the most desirable place in our establishments is, of course, the retort-house; and this has had a fair share of changes rung, as compared with other parts of our works, for the past twenty years, which have taken us from hand-charged retorts, by way of so-called manual charged, machine charged, inclined, and, last of all, gravity charged retorts. Much ingenuity has been displayed by the introduction of appliances for retort-house practice; and doubtless in very many cases the installing of this or that particular appliance has apparently justified its adoption.

It is open to question, however, as to whether this or that appliance has really and truly proved itself to be a real labour-saving device—the latter term being here introduced purposely to establish really what is meant by a labour-saving device. Has every so-called labour-saving device or plant really and truly attained its object? Or has it in the main, to put it bluntly, robbed Peter to pay Paul? So far as the retort-house is concerned, would not these so-called labour-saving appliances be better styled labour-easers, or some such name? Probably the shortcoming—shall I term it?—in this respect, in almost all mechanical means of stoking, is one of the factors which led us on to the idea of the inclined retort, and eventually to the vertical retort. The utilizing of the force of gravity for the charging and discharging of our retorts at once appeals to one as being withal the most sensible, simple, and ideal means of completely abolishing much of the arduous work in retort-house practice.

Yet in spite of the fact that vertical retorts have been for some time out of their infancy, there is much divergence of opinion as to whether they are really so much in advance of (say) the horizontal or inclined retort. There is even yet something about the principle of vertical retort carbonization which renders it unacceptable to all gas engineers. It would be useful perhaps to probe out the reasons why this should be so, in view of the apparent idealism of the general principle. In the first place, from my own short experience of continuous vertical retort practice, I wish to state emphatically that, so far as I have been able to judge, nothing can be more desirable, nothing easier to operate, nothing more complete and satisfactory, when the primary requirements of the whole idea are obtained. By this latter, of course, I mean the continuity, or the even continuity, of the downward flow of the coal. Any disarrangement of the subsidiary requirements—heats, cooling, gas take-off, or the like—are in the main mechanical; but the satisfactory working of the whole is first and foremost dependent on the even and continuous swallowing up, so to speak, of the quota of coal. The balance of working is very quickly upset when this latter is interrupted; and it is the liability to interruption that is probably the main cause of the general principle of vertical retort practice being fought shy of.

There is a lack of certainty of obtaining for long together that very necessary downward flow; and arising from this there is a condition of inflexibility or inelasticity in the general principle, as worked in plants hitherto constructed, which renders the latter such that they do not lend themselves to the overcoming or the righting, within reasonable limits of time, of such interruptions of smooth working. To be perfectly frank, it is quite possible to have a good "run" (in which all the results we look for have been satisfactorily obtained) very quickly, almost suddenly, upset, and before the normal balance of working is restored find that all the good results have been nullified. This may be due to inefficient supervision, indifferent operation, changes of coal, variation of carbonization temperature, &c.; but in almost every case I think it is traceable to the downward flow of the coal.

One wonders sometimes if vertical retorts, as they are constructed to-day, are as perfect as is desired—for as they have worked well, they can work well; and it must be accepted that the principle is possible to accomplish. Yet there is something inherent in it which renders it non-acceptable to all. In a nutshell, this inherent something is undoubtedly the uncertainty of passing the coal through the plastic stage; and it would appear that some satisfactory method of overcoming this would render

the practice universal. The plastic stage is the bane of present methods—being the direct cause of holding-down the gases in the lower portion of the retort, with consequent pressure and over cracking, formation of scurf, limiting the working period, preventing the egress of gases, with resultant low yields, causing "hanging," with always a great liability of "losing" the retort altogether. There is no harder work than moving, or attempting to move, a charge which has become fixed, nothing more tantalizing to those responsible for the plant—and, by the way, as far as the labour is concerned, nothing that is more calculated to bring out the worst side of its nature.

It has been said, of course, that clean coal, or selected coals, will—and no doubt they do—minimize the evils of the plastic stage. But it seems to me it should not have to be necessary to select a coal that is workable—rather should the principle of dealing with the coal be modified in order to attain perfection, and so deal with any coal—provided, of course, that it is a gas coal at all. It is also said that the getting of the coal through the plastic stage is purely a question of temperature, and the right temperature, in the hot zone or at the actual portion or slice of the retort where the plastic stage is expected. This in itself is liable to variation; and it would appear it is more a question of temperature in relation to thickness of cross section, or, in other words, the bulk to be penetrated. Take, for example, a retort rated to carbonize 5 tons per diem. This, reduced to hourly charging, or bin-filling, means round about 4 cwt. per hour. Now, if this 4 cwt. bin charge passes little by little, as it is expected to do, down into the retort, all goes well, and, as a general result, the desired continuity of things is attained. But if for any cause, apparent or seen, this does not take place, the almost inevitable result is that a good portion or even the whole of the 4 cwt. of coal gets dumped into a space in the top end of the retort, and even heat penetration at the right point in its furthest downward flow is interfered with, resulting in a "lump" of plastic coal just at the very part of the retort where most of the actual carbonizing is taking place, occupying the whole of the cross section. Then the trouble begins. But if instead of taking the risk, as it were, of the 4 cwt. being nibbled at, at the requisite rate, we could adopt means to ensure that the 7½ lbs. (be it more or less) per minute were, with certain regularity, passed into the retort, it would seem that troubles from the plastic stage of the coal would be considerably minimized.

The extraction of coke is, in the main, satisfactorily provided for, and the rate of extraction is reduced in all cases to the pounds per minute scale. Then why should not the question of coal feed be, in similar manner, reduced to a factor of certainty? Assuming that this can be done, the question of plasticity would not then probably be insufficiently worry-free, from the very fact that green coal is not even then passing, so to speak, from one plane as green coal into another lower plane, in which it can have assumed a sufficiently coked state as to break away, and move further downwards without the trouble of further fusion. It would seem, then, that means require to be adopted which will more rapidly carbonize the coal, or at least more rapidly change it from its green state to a sufficiently far advanced coked state, in which it will have passed the point where further fusion is not expected to such a degree as to cause trouble. In addition to this, it looks as though it would be preferable to carry out the "rapid coking" in some position of the retort which is not directly above, or rather some position or place where the coal being rapidly carbonized is not actually resting on top of a previously carbonized parcel. This amounts virtually to dividing the process of distillation into two distinct stages, and would, of course, involve radical alteration in the construction of plant. There are obviously many features which present difficulties from an engineering standpoint, and essentially plant could only be first of all built as experimental. But I am far from being convinced that the application of a two-stage process would not be one of the completing factors towards the full acceptance of the principle of vertical retorts.

I understand that there is an improved system of coal carbonizing which applies itself to the regular feeding of the retort. But this first sets out to grind the coal to a certain degree of fineness, or even to a powder. Not having seen the system in actual operation, one cannot speak further as to its merits; but general experience is that the less small or slack in the coal the better. In regard to the securing of ideal conditions in the retort, I would almost advocate the direct opposite of this principle, by suggesting going so far as to stamp or press the coal into blocks or bricks of a useful size, and the tipping of these, in sufficiently quick succession, into the retort. In short, there is room for the application of some modification in vertical retort carbonization—it will be understood that I am referring in particular to continuous retorts—which will overcome the troubles of the plastic state of the coal, and ensure the certainty of a free passage for the gases evolved throughout the whole process.

As a further qualification of a two-stage process, it might be pointed out that possibly—even very probably—a much shorter vertical length of retort would be necessary, which in itself would probably to some extent compensate for the extra outlay incurred in the more complex arrangements at the upper end.

THE PURIFICATION DEPARTMENT.

The President then went on to refer to another opening for more desirable methods of working—namely, in the purifying department. It seems, he said, as though we are somewhat behind in this respect, in that the present principle cannot be, or has not been, reduced to the "little bit each day" idea. Why not, he asked, have continuous vertical purifiers. Questions of velocity, time contact, &c., are the obstacles here; but surely the question is worthy of some attention and investigation on lines other than have hitherto been attempted.

WHAT OF THE FUTURE?

After some remarks on several other matters, the President brought his address to a close as follows: We are concerned with the future; and we are convinced of the part that our industry is destined to play in that future. We are out to make the community understand how vital and legitimate it is, what advantages it provides, how it can help to pay for the war, how it can be applied to the advancement of other industries, and to the betterment of social conditions and generally to the enrichment of the nation. Such knowledge, to be driven home, will require the best efforts of every member of the industry, each in his individual sphere of operation. To the attainment of such an end, let us resolve to pass nothing by, but to give the fullest, the fairest, and the most just consideration, attention, and thought to all matters which suggest progress.

DISCUSSION.

Mr. M'LUSKY (Huddersfield), in opening the discussion on the address, said they would all be interested in Mr. Garsed's references to the matter of the possibility of using the continuous purifier without the present material (iron ore) or some new reagent, because it was obvious to all of them that the present system was not really an advanced one, either as to the use of material or labour. When they thought of the relative efficiency of the huge tower scrubber and the small rotary working scrubber which would largely do the same work, they could easily understand how efficiency could be gained by employing sulphur absorbent in the wet state.

Mr. JOHN DEMAIN (Ripon) said that as to the matter of purification, some years ago he met a man who was promoting a number of small gas companies and who had something like the idea to which Mr. Garsed had referred. The idea was to do away with the ordinary square box purifier and have one built-up of separate boxes. These might be likened to boxes 6 ft. square and 1 ft. deep, and filled with 6 in. of oxide. There was a series of these built up to any required height—from six to twenty boxes, as might be needed. If this was not sufficient, he would build-up another tier of them, and with a continuous change of oxide at the rate of one or two boxes every day. He (the speaker) laughed at the idea at the time, but had since come to regard it as something appearing to be rather feasible, and which might easily be followed out and made a success. It was quite a job to fill and refill the large boxes, especially in these days of shortage of labour; whereas by means of the changing boxes they could get through a vast amount of handling of material in the short space of time which was necessary. In regard to the matter of capital charges, he had followed the analyses of gas-works accounts very regularly, and had come to the conclusion that 99 p.ct. of the works that were selling the cheapest gas had got the lowest capital charges.

Mr. J. E. LISTER COOPER (Yeadon) said he had been rather surprised not to hear more about the matter of the national electricity scheme which had been announced; but he was inclined to think that a very long time indeed would be likely to elapse before they heard anything of actual progress with it. He thought those who had formulated the scheme had been thinking more of the conditions in London than those in the rest of the country, and had been influenced by the price of gas and coal and electricity in that area. They, no doubt, considered it would be very nice to put down a superstation in the middle of a Yorkshire coalfield, and wire current to London at about a quarter of the present prices of electricity or gas. But in that case it appeared to him that the gain to London would be at the cost of the remainder of the country. He entirely agreed with Mr. Garsed's view on the labour question. In regard to purifiers, two years ago he was shown some drawings of a patent purifying machine by a fellow member who was clever, but had since dropped out of the industry. It was on the same lines as the one to which Mr. Demain had referred. The chief point of it was that the trays, one above the other in two tiers, were filled with a small quantity of the oxide and never emptied. By some simple mechanical motion the rotation of the trays was effected in such a way that the difficulty caused by the oxide adhering to the working parts—which seemed to have almost defied any effort to overcome it up to now—was got over. It would be very good if somebody would make a model of the apparatus to which he referred, and bring it to a meeting to show them how it worked. He moved a hearty vote of thanks to the President for his address.

Mr. L. SHAW (Rothwell), in seconding the resolution, said that he should like to see oxide done away with altogether. On small works they could not always spare the labour to get it out. Purification by liquid would be much better, he thought, than by oxide. As to vertical retorts, he considered that they left much to be desired before they came to be anything like as satisfactory as inclined retorts.

The resolution having been carried,

The PRESIDENT, in replying, said that there was no doubt that, in regard to vertical continuous purifiers, the horizontal trays referred to had had a good deal of attention in a quiet sort of way; but it did not appear that they had ever matured. One of the furthest advances made in this direction was a circular rotary purifier. By a sort of corkscrew motion the oxide was induced to pass from the top of the vessel downwards to the removing chamber at the bottom. In regard to the central electricity scheme, they did not want to decry it in the least—they only desired that the national resources of the country in the matter of coal should not be applied in such a scheme as that in its present state. Why should not use be made of the possibility of carbonizing coal for gas in almost every corner of the globe? As to labour, the *crux* of the whole matter was that in the future labour would have to be recognized at its true worth; and the sooner this was understood the better it would be for those who had control of it.

COKE-OVEN MANAGERS' ASSOCIATION.

(MIDLAND SECTION.)

A Meeting of the Midland Section of the Coke-Oven Managers' Association was held on Saturday afternoon, at the Fuel and Metallurgical Department of Leeds University, under the presidency of Mr. J. W. LEE (Grassmoor).

The PRESIDENT said he was glad to welcome, on behalf of the section, one who had done a very great deal of work for the coke-oven industry, and stood in the forefront of its practical side. Mr. Greaves had spoken to some of them on their own plants with authority; and they recognized his right to read a paper as one who could impart useful knowledge.

Mr. W. GREAVES, F.I.C., who was warmly received, read two short papers.

IMPROVEMENTS IN APPARATUS FOR THE MANUFACTURE OF CONCENTRATED AMMONIA LIQUOR AND BENZOL.

Prior to the war the very large majority of firms manufacturing ammonia converted it into sulphate of ammonia, and those who did not, and who converted it into what was then called concentrated ammonia liquor, were satisfied if they obtained a liquor containing on an average some 16 to 18 p.ct. of NH_3. I should think that the firms making anything of a higher strength could be counted on the fingers of one hand; and they kept their methods of manufacture very much to themselves. So when a sudden call was made for a solution of ammonia which had to contain not less than 25 p.ct. NH_3 and not more than 0·5 p.ct. H_2S at that strength, owing to our lack of knowledge in the manufacture of such a substance, some rather elaborate and expensive plants were recommended which were anything but efficient, and many of them had to undergo a good deal of alteration before anything like the ammonia returns which were got in the manufacture of sulphate of ammonia were obtained.

In reality, the apparatus for the manufacture of 25 p.ct. ammonia liquor is exceedingly simple. All that is required is an ammonia still and its accompanying lime still, of such a size that the former is able to deal with the various ammonia waters sent to it without being overloaded; and the latter to be large enough to allow the partially desulphurized liquor to remain in it long enough for the lime to combine with more than sufficient of the sulphuretted hydrogen to bring it below 0·5 p.ct. in the 25 p.ct. ammonia liquor, and also with as much of the carbon dioxide and cyanides as possible. The only other apparatus necessary is some form of still to expel as much of the sulphuretted hydrogen as the quantity of ammonia which must be sent to the ammonia still will allow, together with a means of condensing the excess of steam contained in the ammonia vapours in such quantity that, on finally cooling, the resulting liquid will contain not less than 25 p.ct. of NH_3.

It will thus be seen that the really necessary apparatus for the manufacture of high strength concentrated ammonia liquor consists of few units of simple design. But there are pitfalls in both the design and working of such a plant, which, if not foreseen, will lead to endless trouble and waste of ammonia; and both can be best pointed out by describing an installation for which I acted as Consulting Engineer. The works at which the plant was to be installed were making sulphate of ammonia; and in order to save both time and expense, I desired to use as much of the existing apparatus as possible. There were three ammonia stills already installed; and it was decided to make use of these as follows: Two of the adjoining stills were used as desulphurizers (one being a spare), and the other was employed as a means of getting rid of some of the water contained in the ammonia vapour, and can be called an ammonia concentrator. There happened to be also on the site a cooling coil and tank, as well as a large storage tank. This necessitated the providing of an ammonia still, lime still, and two reflux coolers, together with the pumps and connecting piping. The method of working is as follows.

The incoming gas liquor first passes through one of the reflux condensers, where it helps to cool the ammonia vapours from the still, and at the same time is itself warmed up to about 71° C. It then passes on to one of the old ammonia stills, where it meets a little live steam on its way down the still. In this vessel the gas liquor is subjected to partial distillation; the aim being to drive off the largest amount of sulphuretted hydrogen and carbon dioxide with the least amount of ammonia. In this case the gas liquor enters the still at a temperature of about 71° C., and contains 0·75 p.ct. NH_3 and 0·23 p.ct. H_2S. The partly desulphurized ammonia liquor leaving the bottom of this still on its way to the ammonia still contains 0·69 p.ct. NH_3 and 0·15 p.ct. H_2S. Thus 92 p.ct. of the ammonia and 65 p.ct. of the H_2S are being passed on to the ammonia still to be distilled and concentrated.

It may be thought that 65 p.ct. of the sulphuretted hydrogen is a large quantity to pass on to the ammonia still. It can, of course, be reduced; but it will be at the expense of returning much more of the ammonia along with the waste gases either to a special scrubber, or, if the concentrating plant is connected to a by-product plant, it will put extra work on the ammonia scrubbers. So long as the lime still and the ammonia still are able to extract the sulphuretted hydrogen, the more of the latter is passed on the better, as this results in less ammonia being returned with the waste gases. As the quantity of ammonia passing from the desulphurizer to the ammonia still is limited by the amount of sulphuretted hydrogen which can be extracted in the lime still—and I think I am correct in saying that the figure is generally less than the 0·69 p.ct. I have mentioned—it follows that it is a mistake to work with strong gas liquor when making concentrated ammonia liquor.

This was where many people made trouble. At the plant referred to, they had added a little more water to the scrubbers till they got their ammonia down. It took about four hours to do it. Now they worked at 0·7 they could turn out a very good liquor.

The waste gases escaping from the top of the desulphurizer consist of sulphuretted hydrogen, hydrocyanic and carbonic acids, together with the ammonia compounds of these acids. If the tube which conveys these gases is of any great length, and is cool, it will be found that the ammonium carbonate gradually encrusts on the inside of the tube and finally blocks it up. This can be easily overcome by installing a small steam jet, which will allow the carbonate of ammonia to pass away in solution.

The partly desulphurized liquor from the desulphurizer now passes on to the lime still, where the excess of lime combines with the acids already mentioned. I have found it to be an advantage to allow the entry from the lime still into the ammonia still to be made higher than is usually the case when sulphate of ammonia is being manufactured, as this gives more time for the lime to act upon the ammonium carbonate. It is also necessary to use more lime than is required when sulphate of ammonia is being made, to counteract the hydrolysis of the calcium sulphide.

The ammonia and steam from the ammonia still are conveyed to a reflex cooler in order to extract some of the water vapour. The cooling medium for this cooler can be the incoming gas liquor, which will absorb some of the heat, and thus will be in a condition to begin parting with some of its impurities as soon as it arrives in the desulphurizer. After this partial cooling, the vapours pass to the final reflux cooler, in which they are cooled, so that when they pass on to the final condenser the resulting liquid will contain at least 25 p.ct. of ammonia.

With an ammonia concentrating plant as above described, the following average results are being regularly obtained:

	P.Ct.		P.Ct.
Gas liquor	0·75NH_3	..	0·23H_2S
Desulphurized liquor	0·69NH_3	..	0·23H_2S
Concentrated liquor	28NH_3 to 30NH_3	..	0·20H_2S
Waste water from still	0·006NH_3	..	

The temperatures at the control points of the apparatus are:

Gas liquor going to the first reflux condenser	60° Fahr. or 15° C.
Gas liquor entering desulphurizer	160° Fahr. or 71° C.
Vapours leaving top of desulphurizer	170° Fahr. or 77° C.

A SIMPLE METHOD OF MANUFACTURING CRUDE BENZOL.

Some fifteen years ago the Chemical Engineering Company, of Hendon, introduced to me their patented method of separating from coal tar the first fractions of tar products consisting of water and the benzol homologues up to the higher boiling solvent naphthas. The process consisted of heating the coal tar in a cast-iron coil under pressure by a fire, and then relieving it in the form of a spray into a receiver. The water vapour and the benzols passed off in the form of vapour, while the hot tar flowed into an ordinary tar-still in which the distillation was completed. Since then I have always felt that this process could be adapted to the volatilization of the benzol series from ordinary benzolized wash-oil. Some two years ago I had an opportunity of placing this method before a client who decided to instal it. I am pleased to say it has worked with every success since the day it was started, some twenty months ago.

The benzol is extracted from the coal gas by the usual method of scrubbing; but instead of the benzolized oil being then brought into contact with live high-pressure steam in the ordinary form of benzol still, it is pumped, under pressure, through a cast-iron coil heated to a temperature of 145° C. by hot furnace gases. The hot benzolized oil is sprayed into a small still or dephlegmator the inside of which is at the atmospheric pressure. The benzols and water vapour pass away to a condenser and separator to divide the condensed water from the benzol; while the dehydrated and debenzolized oil flows to the oil coolers to be again used for absorbing further benzol from the gas. In this simple manner, it is easy to produce the ordinary 65 p.ct. crude benzol.

The advantages of this method of producing crude benzol are as follows:

1.—The small capital cost. The plant requires no house, the ground space covered is small, and the parts of the apparatus less expensive than that required for the ordinary method employed for producing crude benzol.
2.—Any inferior fuel can be used for heating the coil, and it enables the heat in the fuel to be employed direct.
3.—Simplicity of working. All that the attendant has to pay attention to are the fire, pump, and thermometer.
4.—Durability. The installation to which I am referring was started some twenty months ago, and has only been stopped for a few days ago, as it was thought desirable to test the duplicate set of coils. The latter are working with equally satisfactory results.
5.—Quickness of erection. The plant was set to work within four months.

The author went into details on many points upon which he

desired to enlarge, by the aid of blackboard drawings and photographic lantern slides.]

DISCUSSION.

The PRESIDENT, in opening the discussion, remarked that the papers had been very interesting on two important subjects on which they all spent a great deal of their time.

Mr. GREAVES was asked a great number of questions on points of detail. In response to an observation by Mr. DAVY, who referred to the suggestion that they should not work with strong liquor, and doubted whether many of them, in practice, could manage 0·75 p.ct. unless they got entirely new stills, if they wished to get quantity, Mr. Greaves asked how much ammonia had Mr. Davy leaving the sulphurizer. Mr. Davy replied from 10 to 12 p.ct. leaving the top of the decomposer, at about 130° Fahr. Speaking with some knowledge of the plant referred to by Mr. Greaves, he asked was it not the fact that they could not get a 1 p.ct liquor on this plant? Mr. Greaves replied that the conditions had been altered since Mr. Davy was there. They had got 1·2 and 1·3 p.ct. They used cold water instead of warm. In reply to Mr. WILSON, Mr. Greaves said that he had had no trouble on the plant with deposits on the main still.

Mr. J. T. PRICE, referring to Mr. Greaves' observation as to the sending back to the plant of about 0·8 p.ct. of ammonia, asked if he thought it would be advantageous if it were kept at a lower temperature and less sent back to the scrubbing plant.

Mr. GREAVES replied that this caused them to get too much sulphur. The more ammonia they sent down the more sulphur they got. What he had given was about the limit the still could deal with at many places. For this reason, they could make only about 0·3 or 0·4 p.ct. ammonia going to the still.

In answer to a member's question, the author said he had no trouble with the automatic valve. The pump was controlled from the pressure in the coil. Some people had a fear of fire. If any of the coils burst or leaked, there would be no harm, because there was nothing but products of combustion around there. The pump shut-down automatically, so they had only the drop of oil actually in the coils to run out. By always using the coke breeze, as he had mentioned, there was no smoke at all coming out.

In answer to Mr. Wilson, Mr. GREAVES said he had no reason to believe there were any corrosive elements in the oil. There was, he added, no ammonium chloride down where the plant was.

After some little discussion on the subjects of lime-washing of gas and of liquor,

Mr. MOSS reverted to the suggestion in the paper that it was a mistake to work with a strong liquor, and said that, in his own experience, a high strength liquor was more satisfactory than one of low strength, apart from quantity. In this observation, Mr. Moss was supported by Mr. Price and others; but he agreed with Mr. Greaves's suggestion that the experience was on another type of apparatus altogether. It all depended, said Mr. Greaves, on the relation between the sulphuretted hydrogen and the ammonia.

Mr. GREAVES candidly agreed, in answer to Mr. Wilson, that the wash-oil deteriorated fairly rapidly under his system. It carbonized more quickly. But they made their own wash-oil, and kept adding fresh oil about once a fortnight, and ran it up until it got about 65 p.ct. pitchy matter at 300°. They kept it below this if they could. He thought the oil got charred. They had, however, found that there was a lot of unnecessary stringency about the specifications for wash-oils. They had been able to get quite good results with practically tar.

Mr. WILSON asked if Mr. Greaves had noticed any difference in the ordinary pitch from such oil.

Mr GREAVES said he had not; but the portion of oil to be run back into the tar-tank was so small as not to affect it.

Mr. HAYMAN thought 3½ tons of steam to 1 ton of benzol seemed a vast quantity. He had used both wet and indirect steam; and the consumption had never been more than 2 tons per ton of benzol.

Mr. GREAVES said his figure was from an actual test; but it included the steam used for preheating.

Mr. LEE said this made it practically one to one.

Mr. GREAVES said that was so—about equal quantities, so far as one could judge from the flow.

In reply to a question by Mr. Davy, the author said they used just a little wet steam in the dephlegmator to agitate it. In answer to another question, he said he knew of no objection to fractionating straight away. Questioned as to the gauges, Mr. Greaves said they had not much wear on them—the mesh was sized just to allow the proper quantity of liquor to come down, and they did not get choked.

Mr. W. GREENE, in proposing a vote of thanks to the author, said that Mr. Greaves was one of the oldest members of the profession. The paper had been on very sound lines, and had dealt with common daily difficulties of their work. It had elucidated a number of points of trouble between the personal element, which came into question at times; and they must all have valued the paper very much.

Mr. J. T. PRICE said that as one to whom Mr. Greaves was an old chief, and one of the first to give him a send off in the business, some twelve years ago, and had proved a guide, philosopher, and friend to him on many an occasion, he had great pleasure in seconding the vote of thanks.

Mr. GREAVES briefly responded.

The Work of Reconstruction.—Dr. Addison (the Minister of Reconstruction) has appointed an Advisory Council to assist him in considering the different proposals that come before his department for review. The work of this department will be divided among four sections: (1) Finance, transport, and common services; (2) production and commercial organization; (3) labour and industrial organization; (4) social development. Each section will advise the Minister on specific questions referred to it. Among the members of the Council is Sir Henry Birchenough, K.C.M.G., who is on Sections 2 and 3, being Chairman of the former; and Sir Richard H. Glazebrook, K.C.B., F.R.S., who is on Sections 2 and 4.

ESTABLISHING A CALORIFIC STANDARD FOR THE UNITED STATES.

Mr. Charles D. Jenkins's Report.

(*Concluded from p.* 349.)

The next section of the report by the Inspector of Gas for the Commonwealth of Massachusetts—dealing with his investigation relative to establishing a calorfiic standard for gas—treats of

LOSS OF CALORIFIC VALUE IN DISTRIBUTION.

He wrote: It is well known that the candle power developed at the works is not always delivered to the consumer in its entirety, either under low pressure for short distances or high pressure for long distances. In studying the effect of distribution of gas made to a calorific basis, high-pressure distribution was used to accentuate the effect.

A test was made of the water gas supplied under high pressure by the Old Colony Gas Company during September, 1916. This was a warm period, and the gas showed comparatively little loss from compression, and probably none from atmospheric conditions. The works' experiments were not wholly satisfactory, as the tests were on isolated samples and not averages of gas. However, there was an apparent loss of 6·4 B.Th.U. between the gasholder and after the compressor. These tests were made during the make—gas being passed into the holder through the purifiers till 1 p.m., Sept. 13. The plant was then shut down for twenty-four hours, and the system supplied from the stock. In the afternoon, at the testing-station (approximately a mile from the works), there was a gain of 23·7, to 551·4 B.Th.U. This represented the value of the stock of gas in the holder after being compressed and sent a mile. Next morning, twelve miles from the works, tests were made after the gas had been stored since 1 o'clock of the previous afternoon and the system kept filled at 10 lbs. pressure. The results, 531·7 B.Th.U., showed a loss of 3·6 p.ct. The uniformity of gas was checked in the afternoon of the same day at the town testing-stations as 552·8 B.Th.U.

In October, 1916, and again in February, 1917, tests were made for loss of B.Th.U. from distribution on a 6-in. pressure line between Malden and Revere—a distance of six miles. In the first series, gas was taken from the line to the compressor and holder. An average of 70 p.ct. water gas the first day was mixed with the coal gas before the station meter, but the mixture fluctuated with the coal-gas production. On the second day only 50 p.ct. of water gas was used. For the series of tests in February, 1917, the gas at Malden was taken after the compressor, with 30 lbs. pressure, and reduced through an individual governor to 5 in. Thus the conditions, compared with those of Oct. 5, were less severe, and showed the effect only of distribution and weather, while the October tests showed, in addition, the effects of compression. In October the first test (on the 4th) was of gas at the usual pressure of about 8 lbs., while the second test (on the 5th), was of gas under 30 lbs.—a pressure used when the occasion demanded. The flow was at the rate of 33,000 c.ft. per hour the first day, and at 65,000 c.ft. the second day. At Revere the gas for the test was taken off just after the reducing governor. Under the 8 lbs. pressure there was an actual increase found in the heat value at Revere, while under 30 lbs. pressure the loss was 1·62 p.ct. Similar tests were made during February, 1917, to bring in cold weather conditions. The gas at Malden was taken off just after the compressor; so that any change in the gas would come from distribution (six miles) and cold. For some weeks the temperature had been below freezing, and snow and ice were on the ground, which was frozen for 2½ to 4 ft.—the temperature at 6 p.m. Feb. 15 being 28° Fahr., and at 6 a.m. Feb. 16, the day of the test, 21°. The gas (74 p.ct. water gas), in the latter part of its travel, passed over a railroad bridge. The loss in B.Th.U. was 36·5, or 6·37 p.ct. An interesting comparison is given in the report of the results in averages for three weeks, including that in which the tests were made.

Taunton is a coal-gas plant—horizontals, machine-charged—making about 700,000 c.ft. per day. Of this, 75,000 c.ft. are sent to Attleboro, under an initial pressure of 20 lbs., through a mile of 2-inch pipe enlarging to 8 inches for thirteen miles. This afforded an opportunity for testing the effect on B.Th.U. of high-pressure, long-distance distribution of coal gas. The Taunton tests were made at the up-town testing-station, while the gas for compression was taken from the same line as it left the holder. On Nov. 2, 1916, and again on March 30, 1917, when the main had been exposed to freezing temperatures during the winter, and was still at about 32° Fahr. in places, the tests were made. In the first case little loss was shown; the average at Taunton being 586·4 B.Th.U., and at Attleboro 585·5 B.Th.U. On the second test, Taunton averaged 642·4 B.Th.U., Attleboro 627·6 B.Th.U.—a loss of 2·30 p.ct. This is a small loss on a high heat unit content. The samples for analysis were all taken by an averaging bottle.

STEAMING VERTICALS.

Vertical installations for coal-gas manufacture are of two types, intermittent and continuous. In the continuous type, the coal is fed at the top, and the coke withdrawn at the bottom of the retort in such a way that the carbonization proceeds continuously. This type offers a splendid opportunity, in theory, of "improving the art of gas manufacture" by increasing the heat units per pound

of coal by the introduction of steam. Experiments were carried out at the Springfield Gaslight Company's plant in March, 1917, with satisfactory results.

Unit B, consisting of 24 Glover-West retorts, in three benches of eight retorts each, was so arranged that the gas could be purified and kept separate from the other gases until a sample could be taken in the averaging holder. After experimenting on the amount of steam that could be used, the following was decided on: Steam at 20 lbs. pressure was fed through a fixed aperture, reducing the pressure to 9 to 9·5 lbs. This steam was passed through two lengths of pipe placed in a waste-heat flue, and acquired about 200° Fahr. of superheat. Then passing through an aperture less than 0·2 in. diameter the steam entered the retort at its lower end at the rate of 350 lbs. per twenty-four hours per retort. The superheated steam passing through the red-hot coke in a lower part of the retort would be partially decomposed, forming blue water gas of approximately equal parts of carbon monoxide and hydrogen; but analysis of the gas shows the further action of the steam and water gas in preventing the cracking of the hydrocarbons. The hydrogen in the steamed sample should have increased by the same amount as the carbon monoxide if the action were only that of making blue water gas; but as the hydrogen remained the same, in proportion, as before steaming, while the carbon monoxide was increased (over 3 p.c.), and the illuminants increased in total amount and also in proportion, it is fair to deduce that the introduction of steam improved the quality of the gas produced as well as its quantity. In addition to this, another advantage appeared in the changed character of the carbon in the retorts. Generally this is in a hard, compact form, detached with difficulty from the retort. But, when steamed, the carbon is more amorphous, is more easily detached by barring, and burns off quicker. In fact, the tests showed 43·7 p.c. less time lost from retorts off for scurfing. There is also an apparent increase in the ammonia production of over 12 p.c.

The actual tests ran for two weeks, after considerable preliminary work had been done. Coal of at least three varieties—sufficient for the two weeks' test—was well mixed in the storage shed to insure a uniform supply. A 15-foot sampling holder was so arranged as to collect an average sample of the gas for the day period from 8 a.m. to 5 p.m., and for the night period from 5 p.m. to 8 a.m. The Company's chemist made tests on each day and night sample, and the State inspectors made one day and night sample test each week for a check. The first week was run without steam, the second week with steam. The results follow:

SPRINGFIELD STEAMING TESTS.

Company's Averages for Each Week.

—	Not Steamed.	Steamed.	Increase (Per Cent.).
Average daily make (c.ft.)[1]	650,000	730,000	12·30
,, yield per pound (c.ft.)	5·49	6·72	22·40
,, B.Th.U.	540	519	3·89[2]
,, ,, per pound	2,965	3,488	17·60
,, candle power[3]	9·5	7·0	26·30[2]
,, retorts out per day	1·81	1·02	43·70[2]

[1] One week without and one week with steaming. [2] Decrease. [3] Argand burner.

State Inspectors' Results and Analyses.

—	March 16, 1917, Not Steamed.	March 23, 1917, Steamed.	
		Day.	Night.
Average B.Th.U. total	523·40[1]	516·00	511·20[2]
,, ,, net	475·70	468·80	463·20
Candle power	8·27[3]	6·10	6·40[4]
Yield (c.ft. per pound)	5·49	6·72	6·72[5]
B.Th.U. per pound of coal	2,873·00[6]	3,466·00[7]	3,435·00[8]

Analyses (Per Cent. by Volume).

Ethylene	1·07	1·79	1·51
Benzol	0·97	0·84	1·06
Marsh gas	27·33	24·93	24·42
Hydrogen	57·69	56·11	56·25
Carbon monoxide	7·92	11·03	11·34
Nitrogen	3·80	3·55	3·79
Oxygen	—	—	—
Carbon dioxide	1·23	1·75	1·63

[1] Company's average for the week, 540.
[2] Company's average for the week, 519.
[3] Company's average for the week, 9·5.
[4] Company's average for the week, 7·0.
[5] 19·57 p.c. increase.
[6] Company's average for the week, 2965.
[7] 20·65 p.c. increase.
[8] Company's average for the week, 3488.

The results show an increased make of gas per pound of coal, an increased "efficiency" factor, a better quality of gas, an increased yield of ammonia, less wear and tear on the retorts, and no disadvantages as yet.

OIL-WASHING.

Having in mind the object to improve the efficiency of service, and knowing the difficulties encountered in delivering gas uniform in quality at the consumer's premises, the question of distribution troubles and their remedies was studied. One difficulty is the presence in the commercial gas of naphthalene and easily condensible hydrocarbon vapours. These are affected by the size of the mains, the speed of the flow of the gas, the fluctuations in the pressure, and weather conditions—at times dropping out of the gas and at other times being picked up by the gas. On a candle-power basis, it is desirable to have the gas carry as much of these elements as it will; but on a heat-unit basis they are not so desirable. Naphthalene can be reduced by washing the gas with various oils. This washing process may reduce the amount of lighter vapours and olefine gases that are not so undesirable. Washing gas with oil is the usual method of recovering the benzol, toluol, &c., carried by the gas; and experiments were instituted, and much study given, as to the effect on its heating value by so doing. Various oils may be used—the usual ones being green and creosote oils, distillates from coal tar, and straw and mineral oils, "non-viscous neutrals," and distillates of petroleum. Washing with these oils takes from the gas some of its constituents, which are recovered from the wash-oils by distillation as "light oils." These light oils are composed of benzol, toluol, solvent naphthas, and other heavier vapours, as well as naphthalene. At present toluene (the pure toluol) is of importance as a base for the manufacture of high explosives; and, owing to the difficulty of getting apparatus for its recovery from gas, study was given to this phase of the question. The problem became one of improvising apparatus to wash gas and to recover the light oils. Gas oil as used for making water gas was used in a "Standard" washer-scrubber as a washing medium. A steam-heated still was made from a boiler feed-water heater, and a condenser from a section of the hydraulic main put on end with piping—later supplanted by a coil of lead pipe for condensing the vapours. The outlet from the still was a 6-in. pipe, 8 ft. high, filled with stones, acting as a dephlegmator. Pipe lines, pumps, and storage tanks completed the equipment. As considerable apprehension was felt by the plant manager as to naphthalene being sent out, attention was given to chemical control of this element. A method for rapid analysis was devised and tested; and it was found that, with the coal gas experimented with, the naphthalene content was reduced from between 26 to 28 grains per 100 c.ft. to between 5 to 6 grains per 100 c.ft. by washing with gas-oil. An additional advantage was found in the reduction of the total sulphur in the gas. Before the washing the amount was 28·4 grains per 100 c.ft., and after washing, 19·5 grains per 100 c.ft.

The oil used assayed 5½ p.c. off at 200° C.; 28½ p.c. off at 250° C.; 62 p.c. off at 300° C.; 88½ p.c. off at 350° C.; with 11½ p.c. as residue.

A test was carried out, washing 1,000,000 c.ft. of gas with 1556 gallons of oil in twelve hours, obtaining 74 gallons of light oils, equivalent to 4·76 p.c. of the wash-oil used. These light oils distilled off from the benzolized oil gave 34 p.c. to 100° C.; 22 p.c. to 120° C.; and 7 p.c. to 135° C.

On fractionating with a column still head there was found to be 29·5 p.c. of benzene, 12·8 p.c. of toluene, and 5·8 p.c. of solvent naphthas.

The effect on the gas is shown in the following table. The retorts were charged every two hours—24 at each charging, requiring forty minutes. The oil was pumped into a washer-scrubber beginning at 9 o'clock and occupying nearly an hour, The tests were made on gas from an averaging holder which showed a lag of thirty minutes before showing the effects of any change in the gas. Therefore the first test would be of gas before the effects of charging and washing were felt.

Time.	B.Th.U.	Candle-Power.
9 15 a.m.	597·8	13·75
9.45 a.m.	599·2	13·66
10.15 a.m.	604·7	14·23
10.45 a.m.	595·8	14·18
11.15 a.m.	587·7	14·01
11.45 a.m.	581·2	13·03
12.15 p.m.	584·5	12·33
1.00 p.m.	587·1	12·04
1.30 p.m.	584·9	12·13
2.00 p.m.	578·4	12·55
2.30 p.m.	598·8	13·05
3.15 p.m.	602·3	13 47
Average	591·8	13·20

CONCLUSIONS.

In the report of the gas inspector for the year 1895 appear the first calorific determinations of Massachusetts gases. Considerable work has been done since by various Committees, Gas Associations, and the Bureau of Standards in perfecting apparatus and refining methods, until to-day calorific value is generally recognized as the most scientific method of valuing gas.

In 1915 a series of tests was made, covering the typical gases supplied by the Massachusetts companies—coal gas, water gas, and mixed coal and water gases. If the average candle power found in these tests be calculated to 16 (the minimum required by the Statutes), and the average calorific value be reduced proportionately, there would be developed a "translation value" of 560·9 B.Th.U. That is to say, if all the gases tested had been exactly 16-c.p. the equivalent in calorific value would have been 560·9 B.Th.U. It does not follow that if gas should be made to a calorific value of 560·9 B.Th.U., the candle power would be 16. This investigation was undertaken, in part, precisely for such information; and the averages for the several periods show the results obtained.

Averages—Weekly Reports.

Period of Time.	B.Th.U.	Candle Power.
July 1, 1916, to Jan. 1, 1917	559·7	15·29
Jan. 1, 1917, to Apr. 1, 1917	558·7	12·64
Apr. 1, 1917, to July 1, 1917	557·9	14·50
July 1, 1917, to Oct. 1, 1917	556·7	14·63
July 1, 1916, to Oct. 1, 1917	558·5	14·83

Even under the stress of abnormal times, the calorific value has remained exceedingly constant, while the candle power has followed the usual fluctuation experienced in changing weather. Uniformity of calorific value is to be desired; for the larger proportion of gas is used as a source of heat, and a uniform quality of gas is the first element of good service to the consumer. If, in order to retain a uniform candle power, the calorific value varies, the actual service rendered to the majority of consumers will be impaired.

Good service consists of uniform quality of gas supplied under uniform pressure through efficient appliances kept properly adjusted. The gas should be of such quality that the consumer gets the greatest amount of useful, available heat at the least cost. This means that the diluents, or inert gases, should be kept as low as commercially practicable, and that the gas should be so made as to insure the delivery to all consumers, under all conditions of distance and weather, of the largest possible amount of the heat units produced in the manufacture of the gas.

Experiments already described show the loss of calorific value from high-pressure and long-distance distribution to be from 2·3 to 6·5 p.ct. Adding steam to vertical retorts increases the "efficiency factor" 20·1 p.ct., as well as being advantageous in other respects. Tests show that open burners do not develop the full lighting value of gas as determined by the official burner. The loss is from 7·3 p.ct. for coal gas to 52·5 p.ct. for water gas. Open burners vary widely in efficiency among themselves; the tests ranging from 28·6 to 69·3 p.ct. of the true lighting value of the gas. The oil-washing experiments show the possibility of separating benzol, toluol, &c., from gas by washing with oil in improvised apparatus. While oil-washing "hardens" the gas, and tends to increase uniformity of quality by removing condensible hydrocarbon vapours, naphthalene, and sulphur, it somewhat reduces also the calorific value. As toluol is a base for the manufacture of high explosives, and is needed by the Government for such use, and as benzol may also be so needed, it is worth noting that the removal of these elements would only reduce the calorific value by 6 to 7 p.ct. But as the urgent need of the Federal Government for toluol necessitates the recovery of this element from gas, the minimum calorific value required of the gas companies should be set at such a figure as to make this recovery feasible. Considering the results of this investigation, the uncertainty of a supply of suitable coal and oil for gas manufacture, and the need of the Federal Government for toluol, and possibly, later, for benzol, it would seem desirable for the Board to establish a minimum calorific standard of not over 525 total B.Th.U., and to recognize the possibility that this figure may need revision in the early future.

Functions of Gas Coke.

Gas coke forms the subject of an article of a very opportune nature, which appears in the February issue of "A Thousand-and-One Uses for Gas." The author is Mr. E. W. L. Nicol, the Engineer and Fuel Expert to the London Coke Committee; and his text is the notice recently issued by the Ministry of Munitions that, whenever circumstances permit, coke and coal gas should be used, instead of raw coal, for steam-raising, heating, and cooking purposes." A number of coke-burning boiler installations are illustrated, after an explanation of the advantages attending the use of coke as a fuel. It is pointed out that no drilling of the boiler plates or alterations to the fire-bars of coal-fired boilers are necessary to accommodate the London Coke Committee's forced-draught apparatus ["L. Coke C." blowers]. Mr. Nicol remarks that the extent to which this simple and inexpensive apparatus has been successful in substituting coke for raw coal, and, incidentally, in relieving coal traffic on railways serving the Metropolis, may be gauged by the fact that the quantity of raw coal so displaced in the Metropolitan area is now estimated at 250,000 tons per annum. One of the photographs is of the simple device first designed and used by the author some four or five years ago for adapting the familiar chain-grate stoker to the burning of coke or coke breeze. Attention is also given to steam-wagons, which can usually be adapted to the use of coke as fuel merely by a slight alteration to the fire-bars—a relatively wide air space between the bars being desirable. Mr. Nicol brings strong testimony, in the shape of figures of actual results, to bear in favour of the use of coke for the purposes that he so efficiently advocates.

Mr. E. B. Maxted, Ph.D., B.Sc., read a paper last week on "Studies in Nitride Formation," at a meeting of the Birmingham and Midland Section of the Society of Chemical Industry. Dr. Maxted, who is a Director of Gas Developments, Ltd., of Walsall, has for the past three years been engaged in studying the synthesis of ammonia and its oxidation to nitric acid. He is the author of various papers, principally on gas reactions.

LIGHTING CURTAILMENT IN THE UNITED STATES.

The Illuminating Engineering Society of America arranged for a general meeting of members to be held on Thursday, the 14th inst., for the purpose of discussing the question of the curtailment of lighting due to the Fuel Administration's conservation movement. According to latest advices to hand, a paper was to be presented by Mr. Preston S. Millar, the General Manager of the Electrical Testing Laboratories and Chairman of the Committee on War Service of the Illuminating Engineering Society. The author was to present figures dealing with the coal consumption question, including the coal employed for lighting throughout the country and the amount which may be saved; methods of accomplishing the results expected through the curtailment of lighting; the present status of artificial lighting used for various purposes; and other facts pertinent to the subject. It was expected that a number of distinguished men would be present on the occasion—such as the Federal Fuel Administrator for New York, a member of the Conservation and Advisory Committee of the New York State Fuel Administrator, the Chairman of the National Committee on Gas and Electric Service, the Chairman of the Illumination Committees of the National Committee for the Prevention of Blindness, the Chairman of the Committee on Coal Conservation, United States Chamber of Commerce, the Acting Director of the National Bureau of Standards, the Chairman of the National Lighting Committee, United States Committee of Labour, and the Chairman of the Lamp Committee of the National Electric Light Association. The question of the curtailment of lighting is regarded in the States as a very important one at present, and the writer of the paper submitted would, it was stated, present facts and figures in this connection which "will be a survey of the present situation throughout the country."

The Forthcoming American Gas Association.

It is regarded as a practical certainty now by the "Gas Record" that the long-planned union of the American Gas Institute and the National Commercial Gas Association of America is accomplished; all that was required to bring the American Gas Association (as the new organization has been officially named) into active existence being a joint meeting at which a constitution and bye-laws would be adopted and officers elected. By the beginning of next month, therefore, our contemporary predicts, the new Association will be in full swing. The present membership of the two bodies will be preserved as the Commercial Section and the Engineering Section respectively of the American Gas Association. A third section will be composed of the members of the present Manufacturers' Section of the National Commercial Gas Association; while a fourth section, to be formed later, will be known as the Accounting Section. Each section will have its own paid Secretary; and the Chairman of each section will automatically become a Vice-President of the Association.

The "Practical Engineer" Mechanical Pocket Book.

With the matter thoroughly revised, and additions made wherever considered necessary, the "Practical Engineer" Mechanical Pocket Book and Diary for 1918 has made its appearance. Users of this little pocket book in the past—it has now reached its thirtieth year of issue—will have no need to be reminded of the large amount of miscellaneous engineering information which it contains. For the benefit of "JOURNAL" readers, however, it may be stated that the book contains chapters on "Gas Engines" and "Gas-Producers;" while the matter on "Gas" has been considerably extended, and now forms a complete section of its own. There is to be found information as to gas-furnaces—though only one particular make is illustrated. A diagram is also given, which is intended to assist in arriving at the sizes of piping required for different gas installations. Safe maximum capacities of gas-meters of various sizes are given; and some pages are devoted to high and low pressure gas lighting. Then in the appendix there are some remarks on gas coke for steam-raising, with a table specially compiled by Mr. E. W. L. Nicol (the Engineer to the London Coke Committee), showing the approximate fuel cost of evaporation per 1000 gallons from and at 212° Fahr., with common fuels at varying prices per ton delivered. The book is issued by the Technical Publishing Company, Ltd., No. 1, Gough Square, E.C.

Lectureship in Industrial Management.—A group of large firms engaged in the principal industries of the Manchester district have offered to the governing body of the School of Technology the sum of £3000, spread over a period of five years, towards the cost of establishing a new Department of Industrial Management; and the Manchester Education Committee, in recommending that the gift be accepted, expressed their high appreciation of the public spirit of the donors. It is proposed that a lecturer shall be appointed for this period of five years at a salary of £600, to conduct research in the subject of industrial management, to organize a new department, to lecture to members of the University and to the public, and to assist industrial concerns in the solution of management problems. Persons having special experience will also be invited to deliver lectures at substantial fees.

CORRESPONDENCE.

[*We are not responsible for opinions expressed by Correspondents.*]

Terms and Conditions of Employment in Gas-Works.

SIR,—I understand some proposal has been made by which the National Gas Council of Great Britain and Ireland would have delegated to it the task of discussing with representatives of employees the terms and conditions of employment in gas undertakings.

I suggest that it is not competent of the National Gas Council to do anything of the kind. It was "established at a conference of representatives of the Institution of Gas Engineers, the British Commercial Gas Association, the Gas Companies' Protection Association, and the Society of British Gas Industries" "to promote or defend the interests of the gas industry of the United Kingdom," and, *inter alia*, "such other lawful things as may be incidental to, or conducive to, the attainment of the above object."

The Council also contemplated registration under section 20 of the Companies (Consolidation) Act, 1908. Under this section, the Board of Trade may issue its licence for the registration of an Association "formed for promoting commerce, art, science, religion, charity," &c., subject to certain regulations. The first of these regulations provides "that the Association shall not support with its funds any object or endeavour to impose on, or procure to be observed by, its members or others any regulation, restriction, or condition which if an object of the Association would make it a Trade Union."

The definition of "Trade Union" is given as follows in section 23 of the "Trade Union Act, 1871:" "The term 'Trade Union' means such combination, whether temporary or permanent, for regulating the relations between workmen and masters, or between workmen and workmen, or between masters and masters, or for imposing restrictive conditions on the conduct of any trade or business, as would, if this Act had not passed, have been deemed to have been an unlawful combination by reason of some one or more of its purposes being in restraint of trade."

It may or may not be necessary to have a Union or Federation of gas undertakings authorized to deal with labour questions. But in my opinion the National Gas Council is not in the slightest degree so authorized. If it can deal with wages in gas-works, why not in gas-stove foundries, and meter-makers' shops? Its "constituent bodies" are equally interested whether gas-makers or stove-makers or meter-makers.

The fact of the matter is gas manufacture is not a trade in the usually accepted sense of the word. Its organization is built-up of a great many trades; and each undertaking will have to work under similar conditions as regards the employment of labour as those current in the particular city, or town, or village in which they happen to be situated.

It may be urged that it would not be politic to send a *non possumus* to the request of the authorities. My reply is that in this matter the Council cannot represent the industry, and that it has neither mandate nor authority to do so. For myself, even if it were desirable, I see grave difficulties in setting up a "Federation of Gas Undertakings" qualified to deal with labour problems in all the gas-works of "Great Britain and Ireland."

Until that comes about, we must settle each of us with our own employees, and that would be the best advice the Council could give to its members.

CHARLES CARPENTER.

709, *Old Kent Road S.E.*15, *Feb.* 18, 1918.

The Most Cheaply Produced Gas.—Lancaster v. Widnes.

SIR,—I notice from a letter which appeared in your issue dated the 19th inst., over the signature of Mr. C. Rhodes Armitage, of Lancaster, that I was right in my assumption that it was the officials of the Gas Department, rather than the Chairman of the Committee, who were responsible for the erroneous claim of manufacturing gas at a less cost than any other works.

Alluding to the figures I gave in your issue of the 12th inst. [p. 302], and assuming that the total net cost for Widnes of 13·04d. per 1000 c.ft. —as published in the "Gas World Analysis of Accounts"—was correct (which it is not), the advantage that Lancaster is attempting to claim—*i.e.*, 0·32d. per 1000 c.ft.—would arise entirely through difference in the amount of "rates and taxes" paid by the two concerns; Lancaster being 0·58d. below Widnes.

Again, I say that the only figure by which a fair comparison of cost of making gas, between one works and another, can be made is that of the net cost into holder (exclusive of other outside charges over which the management has no control); and I have already shown that in this respect the results obtained at Lancaster are not comparable with those of Widnes.

ISAAC CARR.

Gas-Works, Widnes, Feb. 23, 1918.

War Savings—An Appeal.

SIR,—The National War Savings' Committee has asked the co-operation of the National Gas Council in a matter of great importance to the country.

A strenuous effort of business men to promote the sale of National War Bonds and War Savings Certificates is to be made during the first week in March.

Employers of labour are asked to adopt an instalment plan (if they have not already done so) for the purchase of War Savings Certificates, which has been found to be so eminently successful.

The Hon. Organizer asks every employer to arrange a meeting of his workpeople on Wednesday, March 6, at 12 noon (11.45 where the luncheon hour is fixed at noon).

The urgency of the matter in relation to victory should be explained to the workpeople, and typewritten slips prepared beforehand should be handed round showing:

1. The instalments which the employer is willing to accept.
2. Space for the amount of War Savings Certificates desired by the employee.
3. Space for signature of employee.

If, therefore, the employees' investment in War Savings Certificates, added to the employer's own in National War Bonds, are registered on Thursday, March 7, the enemy will learn the cause of the strange silence of our industries between 12 and 12.30 on the previous day.

If your readers are able to co-operate in this scheme, they should forward their acquiescence to the National War Savings' Committee, Salisbury Square, London, E.C. 4. W. J. SMITH, Secretary.

National Gas Council, 39, Victoria Street, London, S.W., Feb. 21, 1918.

"Coalite Réchauffé."

SIR,—Your criticisms in the last number of the "JOURNAL" on the articles appearing in the "Financier" are well to the point. It is writing by laymen in non-technical papers which is so misleading, and does so much harm to enterprise generally.

Knowing the late Mr. Parker, the inventor of "Coalite," and having frequently had the opportunity of visiting the original Wednesfield plant in his company, the writer often wonders where the originality in the process lay. The original, or, as it is claimed by "Coalite," the "master-patent," is before the writer; and it may be of interest to consider it and the claims therein.

The preamble states generally that "the object of the invention is to produce a smokeless fuel by the partial destructive distillation of coal in the presence of steam at a temperature not exceeding 800° Fahr.; the produced fuel being charred or partially coked coal." There is nothing particularly novel in this. But if it were so, this idea had been anticipated by a previous invention working on the same lines; and this Mr. Parker admits in par. 5 of the complete specification. So far, therefore, the preamble of the patent claim is ineffective and, in the writer's opinion, invalid.

We now come to the technical method claimed for working-out the preamble claims. This, according to Mr. Parker, was to be effected by:

Carbonizing in Ω-shaped metal retorts, 16 in. high, 5 ft. wide, and 7 ft. long, set horizontally, and charged with coal not exceeding 6 in. in height; or

Placing the coal in tapering metal cylinders, the ends of which were to be perforated to allow the escape of gas. These cylinders were to be 10 to 12 in. in diameter, and several were to be inserted into a horizontal retort; or

Instead of placing these cylinders in a horizontal retort, they might be placed in vertical retorts; the diameter of the loose cylinders not to be less than 6 in.

The writer had the opportunity of inspecting this latter idea at Wednesfield, and expressed his views to Mr. Parker that it would not, for certain technical reasons, which need not be dwelt on, succeed. This ultimately was so, as the plant was abandoned.

Then Mr. Parker wandered through other ideas such as "slots." He failed again at a gas-works on the South Coast, I think Plymouth; but he came the biggest cropper at Barking—one of the greatest technical failures of modern times.

However, outside the master-patent alluded to, the writer has failed to ascertain that Mr. Parker adopted any idea that was not already widely known. At any rate, whatever plan was adopted—whether original or not—"Coalite" and its advisers succeeded in making a fine mess of it.

Now this miserable "master-patent"—No. 14,365 of 1906—is the "Jove's Lightning" which "Coalite" has hurled at inventors, all and sundry, who should dare to infringe on this wonderful invention.

When challenged, as it was challenged by certain other inventors, to prove its claims, "Coalite" discreetly withdrew; and the whole would have been laughable had it not been for the expense and worry to which such silly fulminations put people to rebut.

What the whole technical gas industry would like to know, and what the "man in the street" wishes to know, are the exact claims of "Coalite" which have induced the Government, or the Departments entrusted with such matters, to advance large sums of money to the offshoots of the "Coalite" enterprise? What trials had the Departments ever made to prove the justification for the advance of public money? Which of the Departments was concerned? Had any of these Departments attached to their bureaux a single individual versed in low-temperature carbonization whose opinion would give them justification in advancing large sums to the Barnsley Smokeless Fuel Company? Had the Departmental chiefs ever read the prospectus of the Barnsley Smokeless Fuel Company, and had they gathered that the business on which they had advanced—*vide* the prospectus—£10,000 (it was much more according to the writer's information) of public money was probably based on a German invention, because under the Companies (Consolidation) Act, 1908, it was revealed, under the heading of "Agreements (Agreement No. 5 B)," that the designer of the Barnsley plant was at liberty to embody the inventions of the Stettin Chamotte Company (German) held by him under licence from the British Board of Trade? It will be interesting to know to what extent the Stettin inventions have been used. The writer can make a shrewd guess. If such should be the case, where do the "Coalite" vaunted inventions come in?

But Sir, just turn to the financial statement (share capital) in the "Barnsley Smokeless Fuel Company's" prospectus, and see how it reads.

SHARE CAPITAL.

Authorized . .	50,000 participating preference shares of £1 each.
	45,000 ordinary shares of £1 each.
Issued . . .	Seven signatory shares.
	£45,000 *issued as fully paid.*

DEBENTURE CAPITAL.

Authorized . .	£50,000 6 p.ct. first mortgage debentures.
Issued . . .	£20,000 " " " "

Out of a £95,000 capital, nearly 50 p.ct. is to be *paper!*

But putting the paper issue on one side, a subscribed capital of

£50,000 is to be at once burdened with a debenture debt of £50,000, and as the prospectus grandiloquently states: "His Majesty's Treasury recognized the importance of the enterprise by subscribing £10,000 of the debentures."

Now the writer and many others would like to know what security the public has for this marvellous prescience on the part of His Majesty's Treasury in parting with £10,000 (probably more) of public money to exploit an untried process, which may probably be based fundamentally on a German invention.

"NEMO."

Feb. 20, 1918.

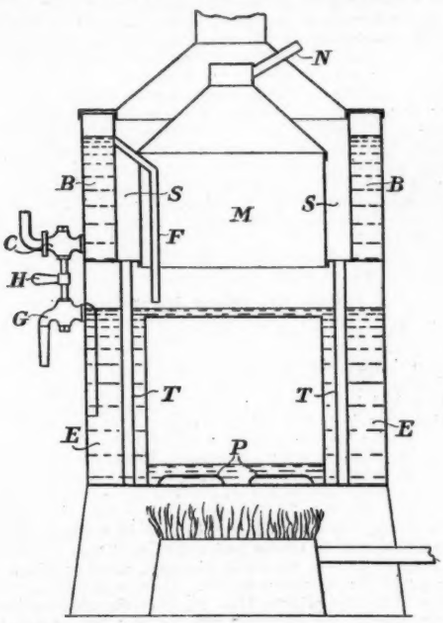
REGISTER OF PATENTS.

Water-Heaters.—No. 112,744.

FLETCHER, RUSSELL, & CO., LTD., FLETCHER, T. W., and BANKS, W., of Warrington.

No. 11,880; Aug. 18, 1917.

This invention relates to water-heaters from which water can be drawn off only when it is boiling, and in which the valves for controlling the inlet of cold water and the drawing-off of boiling water are coupled for simultaneous operation, so that when boiling water is drawn off a corresponding quantity of cold water is admitted.



Fletcher and Banks (Fletcher, Russell, & Co.) Gas Water-Heater.

The casing is divided into an upper annular compartment B, to which cold water is admitted by a cock C, and a lower compartment E, to which water overflows from above through a pipe F, and is drawn off by the cock G. The cocks are actuated by a common handle H, and are so regulated that when open the quantity of water admitted is equal to that drawn off from E. A dome M covers the lower compartment, and is provided with a steam outlet or vent N. In the lower compartment is provided a pressure chamber which communicates with it by openings P in its wall, through which water flows and rises until prevented by the confined air. A gas-burner is fitted in the base of the casing in communication with an annulus S between the upper compartment and the dome M by a number of flues T passing through the lower compartment—thus heating the water in both compartments.

Normally, the level of the water in the lower compartment is below the level of the cock G. When the water boils, the steam is vented through the outlet N, and the pressure generated in the pressure chamber displaces water into the compartment E and raises the level above that of the draw-off cock G. Boiling water can then be drawn off from the lower compartment and cold water is admitted to the upper compartment.

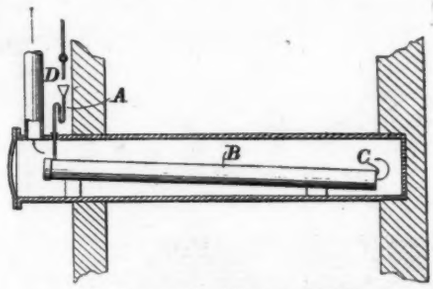
Manufacture of Toluol and Like Hydrocarbons. No. 112,878.

THUMAN, F.; a communication from OWEN B. EVANS, of Philadelphia, U.S.A.

No. 5568; April 20, 1917.

Hydrocarbons of the benzol homologue series—for example, toluol, benzol, and xylol, removed from illuminating gas, or from tar, or from street-drip and the like—are, says the patentee, "peculiar in that from time to time, but not always, they are found to contain a foreign undesirable component or impurity which, notably in the case of toluol, unfits it for its most important use."

The principal object of the present invention is to provide for the removal of the impurity, and the recovery of the pure hydrocarbon, by heating it in the absence of air to produce vapour and decompose the impurity, and recovering the vapour in liquid form, as a source from which to obtain the pure product by known methods. During the process, carbon is deposited and gas evolved. The impure substance may be heated in the presence of a gas which will not support combustion—such as "blue" or uncarburetted water gas or steam. The vapour may be recovered by condensation or by washing with absorbent oils or liquids, or by a combination of these means. The degree of pressure employed is not important, and good results it is said are attained at atmospheric pressure.



The Evans Toluol Recovery Plant.

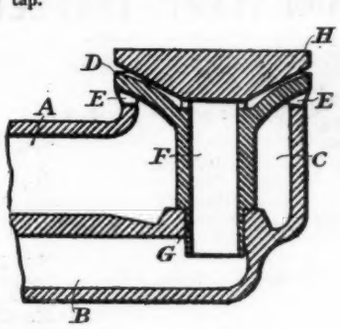
The illustration shows in section one form of apparatus for the practice of the invention in connection with the recovery of toluol. The toluol (or liquid containing it) is introduced as by the seal A, and connections, into a pipe or chamber B, arranged in an externally heated retort. The pipe is open at C, and the retort is connected by an off-take D with a condenser. In traversing the pipe B and the retort, the impure toluol is exposed to a temperature above 1000° Fahr.—preferably 1400°. Carbon is deposited in the pipe B, the retort, and the off-take D, gas is evolved, vapour is formed, and the impurity is decomposed. From the vapour about 75 p.ct. of the original volume is recovered as a liquid; 25 p.ct. being lost in the form of gas and deposited carbon. The liquid is treated by known methods for the recovery of commercially pure toluol, "which is thus obtained from commercially impure toluol as a source."

Gas-Burners.—No. 112,891.

YATES, H. JAMES, of Aston, Birmingham.

No. 8469; June 13, 1917.

In carrying this invention into effect (as shown), a main injector tube A has formed integrally with it an auxiliary injector tube B, which may be shorter than the main tube, and, preferably, arranged beneath it. At one end the main tube terminates in a chamber C, which has an open upper side; and on this side is mounted a disc D, which, in conjunction with the open edge of the chamber, provides a ring of burner orifices E, formed by notches or projections in either the disc or the edge of the chamber, or both. A hollow stem F, depending from the underside of the disc, rests in a socket G, and serves as a communication passage from the auxiliary tube B to another ring of burner orifices formed by the disc D and a second disc H on its upper side. The orifices of the auxiliary burners are formed similarly to those of the main burner. Gas is admitted through separate nipples into the open outer ends of the injector tubes—the supply being controlled by separate taps or a single two-way tap.



Yates's Gas-Heating Burner.

The above construction, it is claimed, enables "a large or a small flame to be obtained in a convenient manner with equal efficiency, as the gas-nipples and air inlets can be carefully adjusted to give the best results in each burner."

Gas-Producers.—No. 112,909.

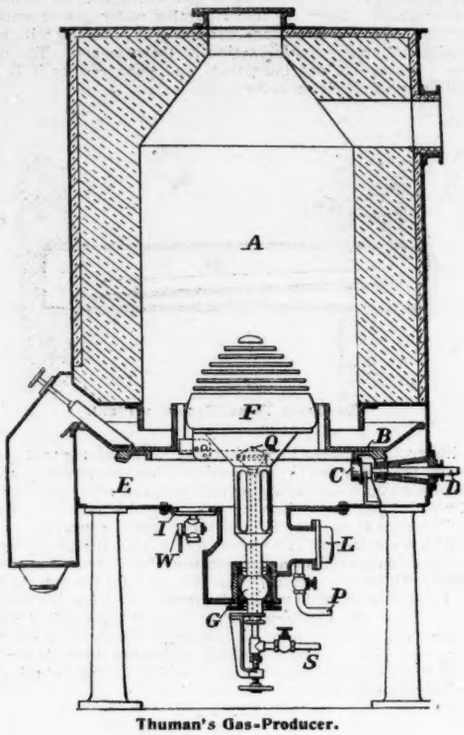
THUMAN, F., of Victoria Street, Westminster.

No. 13,770; Sept. 25, 1917.

This invention relates to the manufacture of producer gas or water gas, of the type in which the air and steam distributing grate, instead of being mounted upon the ash-pan, projects through an eccentrically disposed aperture in the pan into the fuel bed, and is caused to gyrate.

A is a cylindrical fire-brick-lined fuel chamber. B is the ash-pan, rotated about the axis of the fuel chamber upon rollers C, by means of driving gear D connected with suitable power. A gas-tight chamber E,

forming an extension of the chamber A, encloses the grate, ash-pan, and gearing—this being necessary owing to the working pressures of the blast and steam being too high for the practical use of water seals. F is the grate, in the form of a hollow conoidal body with outlet ports



Thuman's Gas-Producer.

at different levels and with a hollow stem or shank formed with inlet ports. The grate is anchored by a ball-joint G at the bottom of the producer, and the centre of the ball is on the rotating axis of the ash-pan; so that the axis of the grate is at an angle to the axis of rotation of the ash-pan, with the result that, as the ash-pan rotates, a gyratory movement is imparted to it at all times.

The air-blast is admitted at L under pressure into the generator, and passes up through the grate into the fire by ports and spaces between the grate and the crushing ring of the pan. Steam may also be supplied through the pipe P. The proportioning of the air-blast and steam supply to the various parts of the fuel-bed is effected by a conical valve Q (within the body of the grate), which can be moved up and down, by a tubular spindle extending through a stuffing box, without interfering with the progress of gas making. Steam may also be supplied by the pipe S to the spindle of the valve Q, the top of which is formed with openings for the passage of steam.

PARLIAMENTARY INTELLIGENCE.

HOUSE OF LORDS.

Petitions against Private Bills.

Petitions have been presented against the following Bills:

Aldershot Gas, Water, and District Lighting, by the Farnham Rural District Council; Hambledon Rural District Council; Farnborough Urban District Council; Surrey County Council; Reading Gas Company; Aldershot Urban District Council; Basingstoke Rural District Council.

British Gas Light Company (Norwich), by the Norwich Corporation.

Brixham Gas, by the Great Western Railway Company.

Chepstow Gas, by the Gloucestershire County Council and the Lydney Rural District Council; Monmouthshire County Council; Chepstow Rural District Council.

Pontypool Gas and Water, by John Capel Hanbury; Monmouthshire County Council; Governors of the Monmouthshire Agricultural Institution; Pontypool Urban District Council.

Wandsworth, Wimbledon, and Epsom District Gas, by the Wandsworth Borough Council; London and South-Western Railway Company and London, Brighton, and South Coast Railway Company.

County of London Electric Supply Bill.

Petitions against the County of London Electric Supply Bill have been deposited by the Gas Light and Coke Company; South Metropolitan Gas Company; Association of British Chemical Manufacturers.

Standing Orders.

It was stated that the Standing Orders applicable to the following Bills had not been complied with; and they were waiting reference to the Standing Orders Committee:

Alliance and Dublin Gas; Basingstoke Gas; Rhymney and Aber Valleys Gas and Water.

Bills Read the First Time.

The following Bills have been presented, read the first time, and referred to the Examiners:

Aldershot Gas, Water, and District Lighting; British Gas Light Company (Norwich); Brixham Gas; Chepstow Gas; Pontypool Gas and Water; Wandsworth, Wimbledon, and Epsom District Gas.

HOUSE OF COMMONS.

Summer Time.

Colonel Sir FREDERICK HALL asked the Home Secretary whether, in view of the benefit that had been derived from daylight saving; the economy effected in the use of coal, gas, and electricity; and the advantage to the masses by setting the clock forward one hour, he would consider the advisability of commencing the extra hour period on Sunday, March 31, and continuing it up till, and including, Saturday, Sept. 28; and whether he would favourably consider the increased benefits to be obtained from putting the clock forward another hour from May 19 till July 21, in order that the advantages of the daylight might be utilized to the greatest possible extent.

Sir G. CAVE said he had received a large number of representations in favour of commencing "Summer Time" on a date earlier than that fixed last year—namely, the second Sunday in April. The proposal to fix an earlier date was strongly supported by the Food Production Department and many bodies of allotment holders, as also by the Coal Controller and his Advisory Board. On the other hand, if the change were made too early in the year, inconvenience would be caused to those whose work commenced at an early hour in the morning, and for whom it meant an extension of the period during which they had to rise in the dark and get to their work, and also to persons engaged in agriculture. After considering all the representations, he had decided that, for the present year, Summer Time shall be brought into force on the morning of Sunday, March 24, and should continue until the night of Sunday, Sept. 29—an arrangement that would give an additional five weeks of Summer Time this year. In regard to the suggestion which was made in the question, and had also been put forward in other quarters—that during the mid-summer period the time should be advanced by an additional hour—there was no power under the Statute to make this further change. He added that the Committee who had the proposal before them reported unanimously against it; and he was not satisfied that it would be an advantage.

Coal Gas Driven Motor-Cars.

Captain BARNETT asked the Secretary of State for the Home Department whether motor-cars driven for private hire in the Metropolitan area, which had been adapted for coal gas at the suggestion of the Petrol Control Board, had now been forbidden to do the work for which they had been adapted; and, if so, whether, seeing that the recent Order would throw out of employment a number of men over military age who had been doing work of utility and convenience to the public, he proposed to take any action in the matter.

Sir A. STANLEY said he had been asked to answer this question. The use of private hire motor-cars driven by means of gas was not prohibited, but was restricted, under a recent Order of the Board of Trade, to necessary purposes only. In view of the need for observing the utmost economy in labour and material, it was regretted that it was not possible to allow the use of hire cars, whether driven by means of gas or petrol, for pleasure purposes. Owners of hire cars fitted with gas apparatus ordered prior to Dec. 21, when the notice of intention to restrict the use of gas in motor vehicles was announced, would be granted permits on application to run these vehicles for the purposes authorized by the Order.

Sir C. HENRY asked why the same restrictions were not applicable to cars driven by electricity.

Sir A. STANLEY said the materials used in motor-cars driven in that way were not of the same kind.

The following Bill was read the second time, and committed:
Rotherham Corporation.

Lurgan Maximum Gas Price Increased.—At a special meeting of the Lurgan Town Commissioners, a letter was read from the Local Government Board for Ireland stating that they were prepared to grant a Provisional Order amending the Act of 1915, so as to empower the Council to increase, during the war and for two years afterwards, the maximum price of gas to a sum not exceeding 5s. 6d. per 1000 c.ft., which means an increase on the present rate of 1s. per 1000 c.ft.

Wandsworth, Wimbledon, and Epsom District Gas Company.—In submitting the accounts for the half year ended Dec. 31 to the proprietors to-day (Tuesday), the Directors will report that the sale of gas shows an increase of 5·9 p.ct. over the corresponding period of 1916. As foreshadowed at the last meeting, the Directors increased the price of gas 4d. per 1000 c.ft. from Michaelmas, and again at Christmas by a further 3d. per 1000 c.ft.; the last increase being forced upon the Company chiefly by reason of the addition to the contract price of coal, through the order of the Coal Controller, from last September. The revenue account shows a profit of £35,459; and after providing for the interest on debenture bonds and stock, mortgages, &c., and on deposits and loans, there remains to the credit of the profit and loss (net revenue) account an amount of £23,332. The Directors recommend that dividends be declared at the statutory rates (showing a decrease by reason of the first-named increase in the price of gas) as follows: On the Wandsworth "A" stock, £6 15s.; on the Wandsworth "B" stock, £5 5s.; on the Wandsworth "C" stock, £4 14s. 6d.; on the Wimbledon stock, £4 12s. 6d.; on the Epsom stock, £5 5s.; and on the new ordinary stock, £4 14s. 6d. p.ct. per annum. The dividend recommended will require a contribution from the reserve fund of £984.

MISCELLANEOUS NEWS.

SOUTH SUBURBAN GAS COMPANY.

The Ordinary Half-Yearly General Meeting was held last Friday, at the Cannon Street Hotel, E.C.—Mr. CHARLES HUNT in the chair.

The SECRETARY (Mr. Wilfrid Wastell) read the notice convening the meeting; and the Directors' report and the statement of accounts were taken as read.

ESTIMATES AND DISAPPOINTMENT.

The CHAIRMAN, in moving the adoption of the report and accounts, said: As to the accounts, I think it will be generally agreed that their outstanding feature is the very meagre profit shown to have been earned concurrently with a wholly abnormal increase in the quantity of gas sold. It will be recollected that the previous half-year's experience was somewhat similar; the trading profit being less than the amount required to pay the statutory dividends, notwithstanding a very large increase of gas consumption. But it was hoped that the addition of 3d. to the price of gas which was made last June would have sufficed to meet the anticipated increase of working expenses; and it is certainly disappointing now to find that at least 6d., instead of 3d., would hardly have counterbalanced the present deficiency. It is disappointing for two reasons—one being that it involves a very heavy withdrawal from our too slender carry forward; and the other, and more important one, that to a great extent this deficiency discounts the further increase in the price of gas of which mention is made in the first paragraph of the report, and which was made necessary by recent advances in the cost of coal, oil, and other materials, and also of labour. It should therefore cause no surprise if another advance in the price of gas becomes necessary in the near future.

COAL, OIL, AND RESIDUALS.

On examining the revenue account a little more in detail, it will appear that the first item of expenditure (coal, &c.) compares favourably with that relating to the previous half year—the reason being that, although the cost of coal was much higher owing to a large proportion having to be brought by rail from Durham to compensate for the insufficient supply of Derbyshire coal, this extra cost was more than counterbalanced by a very substantial saving in the quantity of oil used. This saving is in the nature of a wartime economy, although it is not likely to end with the war. It was forced upon us by the prohibitive price of about six times that at which oil was obtainable before the war, and was made possible by reducing the "inerts" in the gas to the very lowest practicable amount, and using blue water gas, as recommended by Mr. Thomas Glover. As compared, however, with the corresponding half of the previous year, this item of expenditure is higher by no less a sum than £49,485, which to the extent of only £12,292, or rather less than 25 p.ct., was counterbalanced by increased receipts from residuals. It is interesting to note that the total of these receipts as shown on the other side of the account—viz., £73,612—represents only about 45·7 p.ct. of the total expenditure on gas-making material, as compared with nearly 55 p.ct. for the corresponding period of the previous year. Coke, I may say, has not responded in value to the increase in the price of coal, although the addition which it represents of £9869 is somewhat more than equivalent to the larger quantity made for sale owing to the greater quantity of coal carbonized. As you are probably aware, the sale of coke is now under Government control, although so far the only tangible effect of this has been a great increase in the amount of clerical work required of the coke department. We continue to be greatly hampered for the means of delivery by both rail and road. Wagons for rail delivery are not obtainable in sufficient numbers; and while, for delivery by road, some additional motor lorries have been procured from time to time, it is next to impossible to get the proper amount of work out of our team owing to shortage of materials and labour for repairs. It is essential that this question of transport be fully borne in mind in connection with any measure which the authorities may have in view for distributing the stocks of coke which unfortunately are now accumulating, because, with the utmost desire to help, it is difficult to see what more can be done by gas undertakings in this direction under present conditions. The receipts for tar include a contribution of £1362 from the benzol extraction plant, but for which they would have shown a reduction per ton of coal carbonized, although as much as possible is being done to enhance the value of this product for munition purposes. Ammonia has yielded only about 6½ p.ct. more, against an increased production of about 19 p.ct. As you are probably aware, the prices of both ammonia products and benzol are under Government control, as is also the cost of sulphuric acid, which enters largely into the manufacture of sulphate of ammonia. Altogether, the present position as to gas residuals is not a favourable one; and it is one which we are powerless to remedy.

OTHER INCREASES IN EXPENDITURE.

There are three other items on the expenditure side of the revenue account which, together, represent about £20,000 of additional cost, making the increased expenditure this half year in round figures £70,000. Carbonizing wages have gone up as a matter of course, in consequence of the larger quantity of gas made, which necessitated the re-starting of the Bromley works. This has also affected the cost of repairs, which, moreover, has had to bear the brunt of the great increase in the cost of almost all kinds of materials needed for upkeep. Although prices are at the present time so much against us, we regard this expenditure as money well spent, because the works being taxed to their utmost, everything now depends upon their being maintained in the highest state of efficiency. The policy that we have pursued in this respect needs no other justification than the fact that, throughout the period of record demand this winter, the supply of gas was maintained without any reduction of pressure or limitation as to the supply of gas appliances to consumers. In this connection, attention may be called to the recent appeal by the Coal Controller for economy in the use of both gas and electricity. This means the avoidance of waste, in regard to which the Controller may be sure of the co-operation of this Company so far as lies in our power. A circular on this subject was addressed to our consumers in 1916; and this it is now proposed to re-issue. The third item—viz., war fund, bonus, and allowances—amounting to £19,161, as compared with £9043 for the corresponding period of the previous year, consists mainly of the war bonus given to the employees to cover the increased cost of living. Henceforth this as a separate item will disappear; it having been converted into a war wage, in compliance with an award recently made by the Government, the object of which is to allow overtime to be paid upon it. This will add appreciably to the cost of wages; and I may mention that an application has recently been made to the Board of Trade for a substantial addition to the wages of all gas workers. Whether or to what extent this will materialize remains to be seen.

RECEIPTS AND PROFITS.

On the other side of the account, the combined effect of the very fine increase of 18·88 p.ct. in the gas sales, and the higher price charged throughout the half year, is apparent in the improved receipts for gas to the extent of no less a sum than £39,601. To this has to be added £2616 for increase in rents of meters and stoves, and the £12,292 already mentioned from residuals. The total of these is £54,509, which, deducted from the aggregate additional cost of £70,000, leaves a deficiency of (say) £15,500. Thus the balance carried to net revenue account is only £20,032 as compared with £35,299 for the corresponding period of the previous year; and, deducting from this the charges for interest and dividend on the preference stock, amounting to £8361, there is left for dividend on the ordinary stock, £11,671, or £2 3s. p.ct. per annum, which is little more than two-fifths of the Company's standard dividend of 5 p.ct., and represents 2·43d. per 1000 c.ft. sold. Payment of the statutory dividend of £4 6s. 8d. p.ct. per annum will reduce the undivided profit by £11,200; and this reduction would have been greater by £698 had not the interest on the reserve fund been credited to the net revenue account.

THE TEMPORARY REVISION OF THE STANDARD PRICE.

These, Ladies and Gentlemen, are, it seems to me, the essential figures of the accounts, and you will probably agree that they tell their own tale. But there has also to be considered not only the certainty of a further reduction of dividend next half year, but also the unsatisfactory prospect of more reductions to follow. This means that the gas consumer may in the near future have to pay still more for his gas. But it is, generally speaking, within his power to use less of it; as, indeed, he is asked to do by the Coal Controller. It is otherwise with the owner of gas stock, who is powerless to prevent the gradual dwindling of both capital and income on which his or her means of living may possibly depend. But apart from these considerations, there is the broad fact that our business has now to be conducted under conditions that were by no means contemplated when the sliding-scale was agreed to. For one thing the cost of everything has gone up enormously, owing to the war. It is moreover an essential condition of the sliding-scale agreement that gas undertakers should be left free to manage their business in the best way possible, having regard to observance of their statutory obligations. This condition does not now apply; almost every part of our business being under Government control. We are, in fact, no longer masters in our own house. Everything we buy is controlled; and everything we sell is also controlled. We bow, of course, to the necessity for this, and are prepared to make the best of it whatever happens. But we do submit that, in consideration of these circumstances, and also of the fact that ours is an essential industry, Parliament should now concede to us something like an adequate return for the capital invested in the undertaking. We are not asking for anything approaching pre-war dividends, or for any dividend at all corresponding to the present value of money. We desire to recognize to the fullest extent that everyone, from the highest to the lowest, must bear his or her share of the burden imposed by the war. All therefore that we are asking for is that the present price of gas—which is 3s. 6d.—should be made the standard price for the period of the war, and for not less than two years afterwards, so that, for as long as the price of gas remains unaltered during that period, the standard dividend of 5 p.ct. may be payable. This temporary addition of 9d. to our standard price would make it only 4d. higher than the permanent standard price of the Gas Light and Coke Company—an undertaking which is gigantic in comparison with our own; and it would also be lower than the permanent standard prices of most of the suburban companies. It is further proposed that the Company be empowered to apply the reserve fund to make up any dividend to 5 p.ct., should at any time the statutory dividend fall below this amount. This is for the purpose of making some provision for yet higher prices of gas.

THE DARTFORD ANNEXATION.

The principal object of the Bill containing these provisions is, as you are aware, to acquire the undertaking of the Dartford Gas Company. Much has recently been said as to the desirability of linking-up the various electrical undertakings, so as to promote a more economical production of electricity, and also to save administration expenses. At the same time, some of us may have been inclined to think that too little has been heard of gas undertakings in this connection. But, however this may be, we of this Company have nothing to reproach ourselves with in that regard. The important amalgamation which we effected in 1912 with two neighbouring undertakings has, I venture to say, resulted in nothing but good to all the interests concerned, although the war has unfortunately compelled the postponement of the full development and concentration which we have in view. It is another unfortunate incident of the war that, since its commencement, the price of gas has had to be advanced by no less than 15d. per 1000 c.ft. But the consumers in the West Kent district have had the first substantial reduction of 7d. provided for by our Act of 1912; next year also will commence the gradual reduction in the Bromley and Crays district to the price charged in the South Suburban district; while this year the Crays consumers will have the 3d. reduction provided for by a previous Act. We now ask your approval of another step in the same direction. I need not tell you that the Dartford undertaking is, and has been for many years, a well-managed and a prosperous one, and that it occupies a somewhat extensive district adjoining

that of this Company. It has been apparent for some time that a union of the two undertakings is desirable, especially having regard to the fact that the Dartford Company have been nearing the end of their tether as regards productive capacity; while we, on the other hand, are only waiting for a favourable opportunity to commence the erection of new works at Belvedere. Obviously, having regard to the position of the Dartford works and its surroundings, the money required to extend this would be better spent at Belvedere, where there is direct access to both rail and river; while also any sacrifice of property at Dartford to make room for extensions would in this way be avoided. Thus the proposal is one that recommends itself on purely economical grounds, and is therefore in the interests of all concerned. The terms arranged are of the simplest kind. The Dartford Company are well-secured maximum dividend one, limited to 5 p.ct., which dividend has been paid for many years. Accordingly, every £100 of their 5 p.ct. consolidated or ordinary stock is to be exchanged for £105 of South Suburban 5 p.ct. debenture stock—this Company taking over all assets and liabilities of the Dartford Company existing at the time of transfer. May I express the hope, that in the event of this arrangement being ratified, we may prove to the consumers of Dartford to be not unworthy successors of the Company by whom they have been so well served for many years? We propose to give them an immediate advantage by reducing the existing differential charge of 5d. (as between Dartford and the South Suburban district) to 2d., which is to remain for five years, at the end of which period and thereafter, the price will be the same as in the South Suburban district, where the present charge is 3s. 6d.

ELECTRICITY GENERATION.

There are two other matters in the Bill which it may be convenient for me to mention at this stage of our proceedings. One relates to the supply of electricity to any undertaking within what may be called our gas area. In explanation of this I may again refer to what has been publicly discussed for some considerable time—viz., that the fortunes of cheap electricity largely depend upon the coal used for its generation being treated in very much the same way as coal is treated at any gas-works, so as to produce residuals therefrom. It therefore occurred to us that some of our land at Belvedere might very well be utilized for the production of electricity in the cheapest possible way, so as at one and the same time to assist in conserving the fuel resources of the nation, and help our electrical friends in the direction of economical working. We think that nothing but good could possibly result from co-operation of this kind; and, to judge from an overture which reached us before anything could have been known of our intention as regards the Bill, some of our electrical friends are of the same opinion. It is, of course, for them and us to arrange terms if possible; the provisions in the Bill being simply for the purpose of putting the matter in order so far as this Company are concerned.

NON-ILLUMINATING GAS.

The other matter relates to the supply of non-illuminating gas. This is not a new proposition—power having been given to the Glasgow Corporation in 1910 to supply such gas. But much has happened since then to bring into prominence the need of a cheap heating gas for industrial purposes. Our Act of 1912 authorizes the supply of gas for power purposes, but not for heating; and, while seeking to remove this restriction, it is sought at the same time to enable the consumer of heating gas to use it also for lighting by means of incandescent burners, should he be so minded.

A MINIMUM BONUS FOR CO-PARTNERS.

There are other provisions of the Bill to which I may have occasion to refer at the extraordinary meeting, or which will be explained by the Solicitor. But I should now like to say that, since the last general meeting a letter has been received from a proprietor, who has on several occasions at these meetings evinced a vivid interest in the welfare of the Company's employees, suggesting that the bonus to co-partners having lapsed owing to the exceptionally high price of gas, a sum of money should be voted for distribution as a special bonus. We fully sympathize with this suggestion; and Mr. Randall—the proprietor to whom I refer—will I hope recognize in what is said on the subject in the first paragraph of the report the practical embodiment of it. The adoption of a minimum bonus is certainly not free from objection; but, under the present wholly exceptional circumstances, we think it is not an unreasonable course to adopt. At the same time, it must not be understood that in our view the fortunes of co-partnership hang on so slender a thread—so to speak—as a ¾ p.ct. bonus. The great value of co-partnership lies in the good understanding which it promotes; and so long as that continues to exist, the temporary reduction or even extinction of the bonus is of secondary importance. On the other hand, do not let it be supposed that we do not attach importance to the pecuniary advantages derived therefrom; for no one will rejoice more than we shall do at the return of the 7½ p.ct., or even a higher rate of bonus. In this connection I may refer to the publication of what is known as the "Whitley Report" as an epoch-making event of the last few months. The aim of the report is the establishment of co-operation between capital and labour in connection with all industries—in other words, the general acceptance of the spirit of co-partnership. We who have for many years experienced the benefit of co-partnership cannot but rejoice at the prospect of its extension, in whatever form, to other industries.

NEWS FROM THE FRONT.

I ought to mention before sitting down that 442 of the Company's employees have joined the Forces since the commencement of the war. Of these 48 have been discharged, 29 of whom have re-entered the service of the Company. Thirty-one of them have, I much regret to say, lost their lives, and 51 have been wounded, while one continues to be a prisoner in Germany, and two are missing. It will interest you to know that one of our principal foremen, Mr. Glass, has contributed four sons to the war—three being employees of the Company, one of whom is numbered among those who have given their lives for their country, while another has been seriously wounded. Since the last general meeting, two more of the Company's employees have been awarded the military medal—C. Blanchflower and F. C. H. Ellis.

The DEPUTY-CHAIRMAN (Sir J. Fortescue Flannery, Bart., M.P.), in seconding, said the statement made by the Chairman, with his usual lucidity and completeness, had put before the proprietors all that was material in the history of the Company during the half year. Therefore, it was not necessary for him to do more than make the fewest possible general observations. The half year had probably been the most anxious and most difficult that gas men had known during the life of the longest of them; and it was therefore a matter for congratulation that the Company had come through as well as they had done. Co-partnership had been on its trial more during the half year throughout the industry than ever since its institution. So far it had come through well; and in his heart he believed it would continue to do so, and emerge triumphantly from the ordeal through which it was passing. There was one outstanding deduction that he thought they might make in their minds; and it was that, when the war was over, the gas industry would be in a more important position relatively to the community than it had ever been in before. The Chairman had pointed out that the generation of electricity could be carried out more effectively by being in the possession of the gas maker than by the brutal process of consuming coal in furnaces. One lesson the war had taught the community, in connection with the gas industry, was that the bye-products had hitherto not been considered and developed according to their value to the State. He for one had the utmost faith that when the war was over, the Government and the people would recognize it was their duty to see that coal was no longer wasted.

The CHAIRMAN, replying to a question, said he believed the opposition to the Company's Bill of the London County Council was mostly on the financial clauses.

The motion was unanimously carried.

THE DIVIDEND.

Proposed by the CHAIRMAN, and seconded by Mr. E. P. NORTON (one of the Employee-Directors), a dividend was declared for the half year at the rates per annum of 5 p.ct. on the preference stock, 4⅛ p.ct. on the ordinary stock, and 4⅛ p.ct. on the West Kent ordinary stock, all less income-tax.

AGREEMENT WITH THE DARTFORD COMPANY.

The CHAIRMAN said he had intimated the principal features of the agreement with the Dartford Gas Company; and he now had to move: "That the agreement, dated the 26th day of September, 1917, and made between this Company of the one part and the Dartford Gas Company of the other part, as modified by the supplemental agreement, dated the 16th day of January, 1918, be, and the same is hereby, approved."

The DEPUTY-CHAIRMAN seconded the motion; and it was unanimously agreed to.

RETIRING DIRECTORS AND AUDITORS.

On the motion of the CHAIRMAN, seconded by Sir JOHN BORASTON, and supported by Mr. R. GARRAWAY RICE, the retiring Directors (Mr. B. R. Green and Mr. Harold Gundry) were re-elected.

Moved by Mr. FRANK LIVESEY, and seconded by Mr. H. MITCHELL, Mr. Alfred Morland, F.C.A., was re-appointed one of the Auditors.

Extraordinary Meeting.—The Bill in Parliament.

An Extraordinary Meeting was then held to consider the following resolution: "That the Bill now before Parliament, intituled 'A Bill to authorize the acquisition by the South Suburban Gas Company of the undertaking of the Dartford Gas Company, and for other purposes,' be, and the same is hereby, approved, subject to such alterations as Parliament may make, and the Directors may approve."

The CHAIRMAN said he had explained what might be called the principal provisions of the Bill. There were one or two other provisions to which perhaps he ought to refer. One was the legalizing of the Company's contributions to the superannuation and other funds, and another to provide for annual instead of half-yearly meetings. A further object of the Bill was to enable the Directors to raise additional capital by the issue of redeemable preference stock or debentures. He need hardly say it was not the intention of the Board to exercise this power unless compelled to. But they felt they ought to have it, in the event of their requiring any considerable addition to capital in the near future. To clear the way for the issue of redeemable preference stock, it was necessary for them to consider what they should do with the existing £60,000 of preference stock, which was, of course, in the nature of first preference. After carefully considering the matter, the Directors decided to ask Parliament to allow them to substitute, subject to the sanction of the holders, for this preference stock debenture stock bearing the same rate of interest. The difference in the money value of the stock in ordinary times was only one or two points. At the present time, it was a little more. But whatever it might be, the Company were not losers by it; and the same rate of interest would be payable. Another proposal was that they should transform the West Kent ordinary stock into ordinary stock of the Company. At the present time, and so long as gas was above the standard price of 2s. 9d., there was nothing whatever in it—that was to say, the two stocks ranked equally. But whenever the time came (and he was not sanguine enough to think it would come in the near future) that they could reduce the price of gas below 2s. 9d., the West Kent shareholders would have a little advantage. The Directors, however, thought that the possible remote advantage to them would be more than counterbalanced by the immediate advantage of having all the stock of one description. Therefore the Board strongly recommended the acceptance of this proposal.

Mr. C. F. T. BLYTH, LL.D., C.M.G., read the heads of the clauses of the Bill, and explained their intention.

The CHAIRMAN then moved the resolution given above. In doing so, he congratulated Mr. Blyth upon his return to civil life, after having served for more than three years with the Forces, and also upon the distinction of C.M.G. which had been conferred upon him.

Mr. CHARLES CARPENTER, D.Sc., seconded the motion.

Mr. A. W. OKE was not altogether sympathetic with the proposed alliance with electricity; and he was likewise antagonistic to the

holding of annual meetings instead of half-yearly ones. As to the sliding-scale, he suggested there ought to be a united Bill to deal with this question, and that the ratepayers' money should not be allowed to be wasted in opposing a matter of simple justice.

The CHAIRMAN replied that the Directors would not go into the electricity business unless they saw there was profit in it. They were of opinion that the time had arrived when there should be co-operation between electricity and gas. They were not alone in this; it was also the idea of the Government. As to the annual meeting, this would not be obligatory upon them. They only sought the power; and the question of applying these powers would receive further consideration. But there were many advantages in having annual instead of half-yearly meetings. On economical and practical grounds, he was sure for gas companies the annual meeting was sound policy. Regarding a united Bill to temporarily amend the sliding-scale provisions, no two companies were alike. The Directors had considered what was best for this Company; and this was the course they would take to that end.

The motion was unanimously carried.

VOTES OF THANKS.

Proposed by the CHAIRMAN, and seconded by Mr. CHARLES BEADLE, a hearty vote of thanks was passed to the Engineer (Mr. S. Y. Shoubridge), the Secretary (Mr. Wilfrid Wastell), their staffs, and the workmen generally. The Chairman remarked upon the devotion to duty which all had displayed in these arduous times.

Mr. SHOUBRIDGE and Mr. WASTELL having replied,

Mr. R. GARRAWAY RICE moved, and Colonel LATTER seconded, a vote of thanks to the Chairman and Directors.

This was cordially agreed to; and the reply by the CHAIRMAN, on behalf of himself and his colleagues, concluded the meeting.

DARTFORD GAS COMPANY.

Proposal for Acquisition by the South Suburban Gas Company.

At the close of the annual meeting of the Company (which was held at the Bull Hotel, Dartford, last Wednesday), an extraordinary meeting took place to consider the provisions of a Bill now before Parliament to authorize the acquisition of the undertaking by the South Suburban Gas Company.

Mr. CHARLES BEADLE (the Chairman), who presided, having called upon the Secretary (Mr. C. F. White) to read the notice convening the meeting, proceeded to move: "That the proprietors do approve of the Bill now before Parliament, intituled a Bill to authorize the acquisition by the South Suburban Gas Company of the undertaking of the Dartford Gas Company, to confer further powers on the South Suburban Gas Company, and for other purposes, subject to such alterations as may be made in the said Bill by Parliament, and approved of by the Directors." He said this was the most important business they had had to transact since the formation of the Company, and he ought perhaps to state the reasons of the Directors for making this recommendation. Before the war they had several times considered what would be their best way to augment their manufacturing capacity. They were supplying all the gas they could make in the works as they stood, and had no ground on which to erect larger ones. The only alternative was to build new works somewhere down the Creek, or on the river by Long Reach—which would have meant a very big outlay, and consequently a higher charge for gas, for some years at any rate. Then when the war broke out there was the suggestion that they might get some help from their neighbours. They went into the question of obtaining a supply from the South Suburban Company; but found that if they did so they would have to sell the gas without profit to themselves. Then there came the time when the South Suburban Company arranged to build large works at Erith; and it seemed ridiculous that the Dartford Company should put up small works in these marshes while the South Suburban Company were putting up larger ones close to them. Consequently, they thought it well to endeavour to come to some permanent arrangement; and the result was the scheme before them. The Directors were determined that they would not sell unless their 5 p.ct. dividend was fully secured; and after a good deal of negotiation, it was agreed that they should receive 5 p.ct. debentures, with £5 profit on each £100. Though the dividend would only be 5s. more p.ct., the capital value of the debentures would be considerably greater than of their own stock. The Directors did not think they had done badly for the Company.

Mr. A. J. RUSSELL, in seconding the resolution, remarked that all the shareholders must understand that the negotiations had been carried through in their interests. Nothing better for them could have been done than to secure 5¼ p.ct. on a debenture such as this. He had for some years been a shareholder in the Dartford Company, and was also a shareholder in the South Suburban Company; and he personally felt very well satisfied with what had been done.

The CHAIRMAN then read a letter written last September by the late Mr. Charles N. Kidd (formerly Chairman of the Company), in which the writer said that his views coincided completely with those of the other members of the Board.

The SOLICITOR (Mr. A. S. Legg) then explained the Bill, the terms of which, he said, were very simple. It provided for the transfer of the Company's undertaking to the South Suburban Company on July 1 next; for the issue of £105 of South Suburban 5 p.ct. perpetual debenture stock for each £100 of Dartford stock; and for the creation of the debenture stock by the South Suburban Company. Of course, the limits of supply of the Dartford Company would go over to the South Suburban Company. Provision was made for compensation to Directors and Auditors, in accordance with custom in such cases. The officers would also be taken over on as good terms as at present. The last thing was that the price of gas for five years was to be not more than 2d. per 1000 c.ft. above the South Suburban price. After that it was to be a flat-rate with the South Suburban Company in their own district.

The CHAIRMAN said the Board thought it was only right to look after the interests of the town of Dartford, as well as those of the shareholders; and they fought very hard to get a flat-rate at once. After a good deal of correspondence, the South Suburban Company consented to reduce the price of gas 3d. per 1000 c.ft. at once, which would be a great benefit to the town, and in five years' time to come down to a flat-rate with that charged in the Sydenham district, which was the lowest rate charged by the South Suburban Company. This was the best they could do; and he thought it was not at all bad.

Sir GEORGE WHITEHEAD, Bart., said that he calculated the value of their own stock at from £70 to £75 per £100, and that of the debenture stock they would receive in exchange at £89; so that the scheme would give the shareholders a bonus of something like 14 or 15 p.ct. They would all agree that the Board had done the best they could.

The resolution was then carried unanimously.

Mr. RUSSELL proposed a very hearty vote of thanks to the Chairman and Directors for the extremely able way in which they had conducted the business of the Company, and for the negotiations they had successfully carried through.

Mr. D. MICAH seconded the resolution, which was cordially agreed to.

The CHAIRMAN, in acknowledgment, said he felt quite sure they had done the right thing.

Mr. J. HOOKINS thought the staff had done marvellously good work; and he would propose a vote of thanks also to them.

Mr. RUSSELL seconded this.

The CHAIRMAN said he wondered how their Engineer (Mr. F. W. Rapkin) had survived the anxious time he had been passing through. As to the Secretary and the rest of the staff, they all worked very well. Mr. Rapkin's Assistant (Mr. Bernard P. Bezant) had been appointed the Supervisor of gas-works in the County of Kent on behalf of the High Explosive Department of the Ministry of Munitions, which he thought was a great compliment to the Company.

The vote was unanimously accorded; and a brief acknowledgment by Mr. RAPKIN brought the proceedings to a close.

CROYDON GAS COMPANY.

The Half-Yearly General Meeting was held in the Lecture Room at the Company's Offices, Katharine Street, Croydon, last Friday—Mr. CHARLES HUSSEY, J.P. (the Chairman), presiding.

The SECRETARY (Mr. W. W. Topley) read the notice convening the meeting; and the Directors' report and accounts (noticed last week, p. 365) were taken as read.

MEETING AN INCREASE IN FACE OF EXTREME DIFFICULTIES.

The CHAIRMAN, in moving the adoption of the report and accounts, said the history of the Company during the half year was, in the main, the record of continuous effort—attended, he was glad to say, with success—to maintain a satisfactory service of gas, both as to quality and pressure, in the face of steadily accentuated difficulties in the directions of supply of raw materials, depletion of skilled labour, and over-working of plant. What these difficulties had been were little realized by those who had found that their wonted convenience, furnished by gas, had continued despite the inclement weather which accompanied the dark days towards the end of the half year. When he reminded them that, as compared with the corresponding pre-war year, the Company's output had grown from 1534 to 1783 million cubic feet—an increase of 249 millions, or 16 p.ct.—with no addition to their then not too complete manufacturing plant and their then inadequate storage; when it was recollected that at the times of maximum demand it had sometimes been necessary, from considerations of public safety, to suspend manufacture during an air raid, lest indications should be given to their enemies of their whereabouts, resulting inevitably in temporary dislocation of work and diminished output; when he told them that the output on one day reached 8¼ million cubic feet, or 800,000 c.ft. in excess of their previous record day—they would appreciate something of the stress and anxiety their Engineer, and the staff and workmen under him, had had to undergo, and would agree with him when he said that not only the stockholders, but the inhabitants of the district, owed to them, one and all, ungrudging thanks for their work.

MEETING CONTINGENCIES.

As the Company could not reasonably look for the completion this year of the gasholder which was commenced, and on which they spent over £30,000 before the war, and as they had practically no margin of productive power to provide against accidents—bearing in mind also the probability that the demand for gas would continue to increase—the Directors felt that, expensive though constructional work now was, and difficult as it would be to get any engineering work carried out, they had no option but to take some steps to safeguard against the contingencies of next winter. A contract had accordingly been entered into to modernize and bring into use a portion of their No. 1 retort-house—disused (except as a store) for some years past. Urgent representations were being made to the Government Departments concerned to grant the facilities necessary to enable the work to be carried out; and he hoped, in view of the many directions in which the Company supplied gas for purposes connected with the war—he could not particularize, but many of them would be aware of them—and the necessity of maintaining a sufficient supply of gas at sufficient pressure, that they might be successful in their efforts to get the assistance needed. It was no exaggeration to say that a grave responsibility would rest on those whose assistance was necessary if they should fail in their efforts.

AN APPEAL FOR ECONOMY.

They had sought to check the ever-growing demand for gas—in the interest of the consumers more than of anyone else—and some time ago they decided to suspend for the present the supply of any appliances other than gas cooking-stoves. They also sent to their consumers an appeal, which had since then been also made on behalf of the Government, and which he desired now to repeat and emphasize—

namely, that they should economize in the use of gas in every way they could. The result was that for the first time they had to record a decrease—small, it was true, but still a decrease—in the number of gas-stoves on hire. The number of gas accounts had increased by 205 in the half year—a rate far lower than that to which they had been accustomed; but still, as against the corresponding period last year, they had sold 65 million cubic feet more gas, or an increase of 8·1 p.ct.

COAL AND OIL SUPPLIES.

He had already referred to their difficulties in obtaining supplies of coal and oil. The question of price had been, of necessity, a secondary consideration. But, nevertheless, price was a serious matter, and their difficulties here seemed likely rather to increase than diminish. In the half year the price of coal had been 80 p.ct. higher than in 1914, and that of oil 384 p.ct. In the present half year, coal would probably cost them twice, and oil five times, as much as they did before the war.

INCREASED PRICE OF GAS AND REDUCED DIVIDEND.

This, coupled with the great increase in wages, shown by a footnote in the printed accounts as being £12,000 in the half year—and the increase would be greater hereafter than now—and the growing cost of everything used in their business, had made it impossible to avoid an increase in the price of gas, which had been raised as from January by 5d. per 1000 c.ft. Coal and oil alone had cost 3d. per 1000 c.ft. more than a year ago, and special war allowances a further 1½d. This left, on the estimates laid before the Directors, no margin to meet further expenses; and he was unable to say that a further increase could with certainty be avoided. It was their policy now, as in the past, to keep the price of gas as low as they possibly could, consistent with what was of even greater importance to their consumers than price—namely, a good service. Thus an increase in price, when made, lagged behind the added expenses which necessitated it. One result of the increase made would be that the rate of dividend to be paid in August on the ordinary stocks would, by reason of the sliding-scale—which linked together price of gas and rate of dividend—be reduced by 1¼ p.ct. per annum. Even so, their rate of dividend would show a much less reduction on pre-war rates than did that of most of their neighbours.

RESIDUALS.—THE POSITION OF COKE.

He had not so far referred to residuals—always an important item in their accounts. Here they had, as was to be expected, received more than a year ago, but to an extent far less than the growth of the items on the debit side of the revenue account; and they had been hampered in their dealings by many causes entirely outside their control. As they doubtless knew, the trade in coke in London had been brought under Government control since last summer. The intention was doubtless good; but the result so far had been disastrous, no less in the national interest than in their own. It was self-evident that in these days of transport difficulty the national interest required that fuel should, so far as practicable, be consumed at or near to the place of its production. But the trade in coke had been hampered, with the result that many householders had gone back to coal; and while coal was being brought many miles into London to meet their demands, stocks of coke had been accumulating at the gas-works throughout London. This had happened in their case to an extent that had seriously interfered with the operation of manufacture. Quantities of coke here had had from time to time to be moved from one part of their works to another, at great expense. They could not stack coke in large quantities, or move it about, without to a large extent breaking it down into breeze—a much less valuable form of fuel. At least 1000 tons of coke had been in their case needlessly reduced to one half its value from these causes. They had loyally submitted to the restrictions which had been imposed upon them; but these had, as the gas industry warned the Coal Controller would be the case, resulted in needless loss to gas companies, and to the nation.

DEBENZOLIZING PLANT.

It would be seen from the report that a debenzolizing plant had been erected and brought into operation. This step was taken not from any expectation of profit (for it was doubtful whether now or hereafter it would pay), but at the request of the Government, to meet the urgent need for the raw materials required for munitions. This was a step the necessity of which the Company recognized, and which they took cheerfully, regardless of consideration of profit or loss.

THE ACCOUNTS.

He did not propose to take them through the accounts in detail—the comparative figures printed at the side would enable them to make their own comparisons. He might, however, give them a few figures that brought into relief the changed conditions under which the Company's business was carried on. The first was the relation of gross profit to turnover. Taking for comparison the years 1912 and 1917, the percentage of gross profit to total business done was 26—in 1917, it was 13. To put the matter in another way, in round figures their business increased in these five years by one-half; their profits were reduced by one-third. The next was the proportion of the price of gas required to provide dividends and interest. This was in 1912, in round figures, 8¾d. per 1000 c.ft., and last year 7¾d. If, however, they went back ten years, the cost of capital was then 10d. per 1000 c.ft., or nearly one-third more than now.

THE DIVIDEND.

The Directors were able to recommend the shareholders to declare a dividend at the same rate as a year ago—taking from their reserves £8500, or about one-third of the dividend, to enable this to be paid. But the consumers were contributing less per 1000 c.ft. for this purpose than they did under pre-war conditions.

Mr. T. RIGBY, in seconding the motion, thought that, although the accounts were not what might be called brilliant, they were not discouraging.

Mr. C. WEBB asked the number of stockholders there were at the present time; whether any German prisoners of war were employed in the works; whether by paying an increased price for coal they were getting a better quality; and whether female labour was employed at the works.

The CHAIRMAN said that they had 2500 stockholders, about 500 of whom were employees of the Company and co-partners. The total number of their employees was about 700. The coal was not so satisfactory as it was in pre-war times. About 280 of their employees had joined the forces. They had no German prisoners of war, and they had altogether about 110 women in their employment.

Dr. CRITCHLEY asked what were the restrictions which the Coal Controller placed upon coke and which were so disastrous.

The SECRETARY explained that last autumn the Coal Controller thought there should be a rationing scheme for solid fuel round London. Permission for the purchase and sale of coal and coke had to be obtained except in the case of that used for industrial purposes. Householders had to fill in forms stating what were their year's requirements. If a householder wanted coke, he had to fill in a second form and hand it to his coal merchant. The coal merchant earmarked it, and sent it out to the local Coal Controller, and all this had to be done before the gas company could supply the coke. The work necessitated a good deal of trouble to householders to get coal, and they found when they wanted coke they had to fill in more forms. English people did not like filling up forms, and used coal instead of coke; the result being that the sale of coke fell off, and the coke which the Coal Controller hoped would be used was sent away by rail at very great trouble and expense.

The report and statement of accounts were unanimously adopted.

THE DIVIDENDS.

Mr. W. CASH, in proposing the payment of the dividend, pointed to the unfortunate fact that next half year the dividends under the sliding-scale would have to be reduced. There was also the fact that the amount required would diminish the sum carried forward; but he did not know that this was of serious concern, because they had been carrying forward to meet such circumstances. They had no desire to increase the price of gas unless they were absolutely compelled to do so; but the control of their business had largely passed into the hands of Government Departments. They could not control the price of coal; and the tar, sulphate of ammonia, and coke were more or less under Government control. If they took the figures immediately preceding the war, they would see that the price of gas for the half year ended Dec. 31, 1917, was 8d. more than it was on June 30, 1914, and the net price of coal, after deducting oil and the whole of the residuals, had increased by 7½d.—practically the same as the price of gas. Then the war bonuses for this half year amounted to £11,000, equal to 3d. These figures alone were considerably more than they had asked the consumers to contribute in the price of gas; and they were matters over which the Directors had practically no control.

Mr. H. WOODALL seconded, and offered congratulations on the state of the works. Their Engineer (Mr. Caddick) had to work very hard to keep them in a proper state; and they compared very favourably with those of other gas companies throughout the kingdom. With regard to the future, there would be a greatly increased demand for gas; and they were doing what they could to prepare for this demand. It was possible that the plans they had in view would be carried out in time for the works to come into operation. If they were not, it would be because of impossibility of getting materials.

The resolution was carried unanimously.

RE-APPOINTMENT OF DIRECTORS AND AUDITOR.

Mr. W. Cash, Mr. P. H. Hall, and Mr. W. J. Russell, the retiring Directors, were re-elected; the CHAIRMAN, with regard to Mr. Russell, saying that he had been for 55 years in the service of the Company. For over thirty years he was Secretary, and since then he had been a Director.

Mr. F. S. Sloman, A.C.A., the retiring Auditor, was also re-elected.

VOTES OF THANKS.

The Directors having been thanked, on the proposition of Mr. C. WEBB,

The CHAIRMAN proposed a vote of thanks to the staff and workmen and women. Referring to the anxieties of Mr. Caddick, he said that they had been taking out of the stock of coal a great deal more than they had been receiving. It was fortunate that they had been able to build up a stock last summer and autumn, because at the present time there was the greatest difficulty to get anything like the quantity of coal they required. With regard to oil, they might be worse off, because they might not be able to make any contract for oil at all. Within a few weeks Mr. Topley would have completed twenty years' service as Secretary. He paid a tribute to the work of Mr. Sandeman, particularly in laying a pipe under a difficult piece of railway where there were several lines.

Mr. T. RIGBY seconded the motion.

Mr. CADDICK, in response, said that they had not a large stock of coal to-day; but last autumn it was greater than it was now by about 24,000 tons. They had had to use a large quantity of it, and at times it was a very serious problem to remove with the restricted labour at their disposal 400 or 500 tons a day to the retort-house.

Mr. TOPLEY recalled that twenty years ago the Company sold 600 million cubic feet of gas. They sent out to-day about 1800 million cubic feet, or three times as much. There were then on the Company's books about 12,000 consumers; there were now about 47,000. More striking still was the extent to which gas appliances were being used. Twenty years ago there were about 4000 stoves on hire; at the end of last year there were something over 50,000, or about twelve times as many. Twenty years ago the prepayment system of supply for smaller houses was in its infancy; now there were about 24,000 of the smaller houses in Croydon getting gas by the convenient method of weekly payments, which necessitated the services of forty collectors, and represented about three-quarters of a million transactions, each of which had to be carried through in the district and recorded in detail in the office. All the while the question of economy had been kept in mind by the Directors, which was illustrated by the fact that twenty years ago for every 1000 c.ft. of gas sold 1s. was required to give a return on the capital used. During the past year the amount required was only 7¾d. out of the price; so that the charge to the consumers for the use of the money which enabled them to get gas had been reduced by one-third. One thing had not changed; and that was the confidence and consideration which the Directors showed towards their officers, and the unwavering loyalty with which the staff had supported the chief officers.

LIVERPOOL GAS COMPANY.

The Annual Meeting of the Company, which was held at the Offices, Duke Street, Liverpool, last Tuesday, was presided over by Mr. H. WADE DEACON (the Chairman).

The report stated that the total revenue for the year ended Dec. 31 was £1,029,076, and the expenditure £888,581, leaving a surplus of £140,495, which had been transferred to the credit of the net revenue account. After deducting the amount taken for payment of the dividend declared last August, and the interest on the debenture stock and mortgages, there remained a balance of £113,816, out of which the Directors recommended that a dividend for the half year be declared of 2½ p.ct. on the ordinary stock of the Company. Owing to the additional cost of labour and materials occasioned by the war, the Directors found it necessary to increase the price of gas 6d. per 1000 c.ft., commencing with the current quarter.

The CHAIRMAN said the war had led to an unprecedented demand for gas, the quantity sold by the Company in 1917 being 11 p.ct. more than in 1916. In peace time, the increased and increasing demand would have been welcomed; but during war it had added to the Company's troubles. The Controller had cancelled coal contracts; and the inferior supply, at enhanced prices, yielded little over 11,000 c.ft. of gas per ton—a deficiency of fully 1000 c.ft. The limitation of the oil supply and the increase by 500 p.ct. of freights, formed another difficulty. Women had replaced a considerable number of the men withdrawn from the works. Only £2202 of capital had been spent; £9783 being written off, while £28,400 was received on mortgage. A larger working capital was demanded, owing to the growth in sales of gas and the increased cost of production. Coal and oil cost £78,167 more, and the total expenditure was £888,581, as compared with £754,774 in 1916. The Directors found it necessary in December to increase the price of gas 6d. per 1000 c.ft.; and under the operation of the sliding-scale, the dividend must be slightly reduced. He concluded with a quotation from the statement by the City Lighting Engineer: "The only consolation to be derived is that Liverpool, if anything, is better served with gas than other similar towns, and at a lower price."

The report was adopted; the dividend recommended was declared; and at a subsequent special meeting the Company's Bill was approved.

NEWCASTLE AND GATESHEAD GAS COMPANY.

The Annual Meeting of the Company was held last Tuesday, at the Offices, Grainger Street West—Sir WILLIAM H. STEPHENSON (the Chairman) presiding. The report submitted will be found on p. 359 of last week's issue.

The CHAIRMAN, in the first place, referred to the deaths of two Directors in the past year—Mr. N. H. Atkinson, after 26 years' service, and Sir Walter Plummer, after 23 years' service (eight years of which were in the capacity of Deputy-Chairman). The two vacancies had been filled by the appointment of Mr. John H. B. Noble and Mr. Thomas Waddom, who had resigned the secretaryship after fifty years' and four months' service with the Company. Mr. T. P. Ridley, who had been 26 years with the Company, and had for three years acted as Assistant Secretary, had been appointed as Mr. Waddom's successor. Proceeding to review the accounts, the Chairman said coal and oil had cost £66,000 more, and wages over £36,000 more than in the previous year. The statutory addition to the price of coal was now 6s. 6d. per ton over pre-war prices; and this, with the increased price of oil, represented on their requirements about £130,000 per annum. They were now paying bonuses of 20s. per week; and an application for a further advance had been made. The present rate of war bonus represented an annual cost of over £70,000. With regard to revenue, they realized for gas and rental of appliances £59,000 more than in the previous year. The sale of gas showed an increase of 7·46 p.ct. The increased revenue from residuals amounted to £21,000. The total results were an increase in expenditure of £99,000, and an increase in revenue of £88,000. In view of increased costs, they had been compelled to raise the price of gas 5d. per 1000 c.ft. since the last meeting, making a total of 9d. since the outbreak of war. The increase in the price of gas had necessitated a decrease in the dividend, making the rate for the second half of the past year £3 18s. 9d. p.ct. per annum, and the rate from Jan. 1, 1918, £3 10s. p.ct. per annum. As the increase in price, and consequent decrease in dividend, were due to conditions arising out of the war, they felt they were justified in asking Parliament to afford some temporary relief from results brought about by conditions that were never contemplated when the Acts of Parliament were passed.

The report was adopted; and dividends for the half year at the rate of 4 p.ct. per annum on the preference stock and £3 18s. 9d. per annum on the ordinary stock were declared.

An extraordinary meeting then followed, at which the Company's Bill for the relief of financial hardship in consequence of the war was unanimously approved.

ALLIANCE AND DUBLIN GAS BILL.

An extraordinary meeting of the Alliance and Dublin Consumers' Gas Company was held last Thursday week to consider the provisions of the Bill now before Parliament. Mr. John Murphy (the Chairman) explained that the amount of the dividend which might be paid was regulated by a sliding-scale, and depended upon the price of gas for the time being. Every penny by which the standard price of 3s. 7d. per 1000 c.ft. was exceeded meant 2s. 6d. p.ct. off the standard rate of 5 p.ct. From causes over which the Company had no control, it had been found necessary to increase the price of gas from the pre-war rate of 3s. 6d. to 5s. per 1000 c.ft.—thus automatically reducing the dividend from £5 2s. 6d., at which it stood when the war broke out, to £2 17s. 6d. p.ct., for the current half year. The Bill proposed that, instead of every penny in the price of gas meaning a reduction of 2s. 6d. p.ct. in the dividend, it should mean a reduction of 6d. p.ct., with an alternative power to the Company to pay a minimum dividend of 5 p.ct. This alteration would divide the burden cast upon the Company by the war between the consumers and the shareholders, instead of allowing the latter to bear all of its burden as at present. A good deal of opposition was threatened to the Bill. A resolution was passed approving of the Bill.

At a special meeting of the Dublin Corporation, a resolution was adopted, on the motion of the Lord Mayor (Mr. L. O'Neill), in favour of opposition to the Bill. A letter which was read from the Council's Law Agent (Mr. Rice) pointed out that the second section was the only one which affected the Corporation and the citizens. It provided that for a period of two years after the termination of the war, or such longer period as might be decided by the Board of Trade, the Company should be at liberty to travel outside the limits provided by the sliding-scale. It was proposed to pay a dividend of at least 5 p.ct., no matter what the price charged for gas might be. Mr. Cosgrave inquired whether the Law Agent really had a reasonable hope of succeeding in opposition to the Bill.

Alderman Luard said he understood a Committee was to be appointed, and he hoped they would scrutinize very carefully the powers sought to be acquired by the Company. Mr. Sherlock said many gas companies in Great Britain were applying for powers of a similar character. The question of the expense of opposition was a vital one at the present moment. A small Committee should be appointed to see if a compromise could be arrived at, so as to avoid a costly parliamentary conflict in reference to a matter which, after all, only involved temporary hardship. Mr. J. S. Kelly endorsed the opinion that the Corporation should not get at loggerheads with the Company. Mr. Cosgrave regretted that he would have to vote against the resolution. He said the Corporation were in a bad financial position, and could not afford to play "ducks and drakes" with their money, unless they had some reasonable prospect of success. The Town Clerk said the Corporation would lose every right they had if they did not oppose in the present instance. They should not allow one chance to any enemy who wanted to pocket something at the expense of the citizens. On the resolution being put to the meeting, Mr. Cosgrave alone dissented.

HORNSEY GAS COMPANY.

Cheapest Gas in the Metropolitan Area.

The Half-Yearly Ordinary General Meeting of the Company was held on Friday, at No. 5, Great Winchester Street, E.C.—Mr. A. M. PADDON, M.Inst.C.E. (the Chairman), presiding.

The SECRETARY (Mr. W. E. Roberts) read the notice convening the meeting; and the report and accounts were taken as read.

A GRATIFYING STATEMENT.

The CHAIRMAN said the Directors were genuinely gratified at being able to present a statement of this nature to the shareholders on the present occasion. They would see from the report that there had been a small increase in the business at a time when the Company would desire such an increase to be limited in its dimensions. The dividend was restored to its pre-war figure of 12½ and 9½ p.ct.; and this involved the fact, which might well perhaps have been more prominently stated, that the reduction in the price of gas to which he had referred when last he had the pleasure of addressing the proprietors had been effectuated, and they were now selling at a price only 2d. per 1000 c.ft. in excess of that which obtained before the outbreak of war. Going to the accounts, it would be seen that the expenditure on capital account had been confined to the figure of £1482, which was in its turn decreased by the sum of £858, which had been written off from the revenue account for depreciation of meters—leaving them with a very small expenditure as against the increase in gas sold during the period under review. The capital per million c.ft. of gas sold amounted to only £442 at the present time; and this, for a Company of their size, was, he was sure they would recognize, a very favourable figure indeed, and one which largely governed the satisfactory statistics to which he would be referring later on. As to the revenue account, on the credit side, they had received for gas and rental of meters, stoves, and fittings less than a year ago; but this was entirely by reason of the fact that they were selling gas at 2d. per 1000 c.ft. less. Taking the residuals altogether, they had obtained for them £2133 more. The receipts in the aggregate were £2302 more than in the corresponding period. On the debit side of the account, coal and coke had cost £3207 more. It would be noticed that there was a significant omission with regard to oil; and this was due to the fact that none had been used in the past half year. The average price of their coal had been 27s. 5d. per ton, which was an increase of 1s. 7d. as compared with a year ago. The various charges on which they were dependent for the maintenance of the works and for the renewals and repairs had been well kept up. The remaining items in the account needed no comment, as they closely corresponded to what they were previously, and what the Directors expected them to be. The total expenditure was £2720 more, and the profit was £418 less, which balanced the figure he had just given of £2302 more on the receipts side. Coming to the profit and loss account, the epitome was that they had in profit £8495 from the revenue account, and in interest from the cash they had on deposit £241, giving them £8736 as the fruit of their labours over the past half year. Now, they wanted for income-tax, interest on deposits, and interest on debenture stock, together with the dividend, £8741; so that it was just a five pound note which separated the two figures. This was very close working; but it was only so after proper apportionment had been made under every charge put in the accounts which the circumstances required. There was carried forward the substantial sum of £12,728, instead of £12,733. With regard to the succeeding accounts, there was nothing which he could usefully

say. The "Special Purposes Fund" stood at a figure which had been verified and justified with respect to the market rates obtaining at the time the account was struck. In fact, there was an entry, "By appreciation of investments, £32" on the credit side. The reserve fund was smaller than they would wish it to be; but they had no need of it now, and it did not appear that they would have need of it in the future. He was sure they would agree that, taken as a whole, this was an eminently satisfactory statement of accounts.

THE CURRENT HALF YEAR—GOVERNMENT CONTROL.

What the proprietors would no doubt be concerned about was how far this state of things could be maintained through the current half year. There were some advantages in prospect. They had not exhausted all the benefits to be derived from their new Act, which gave them control of their own residuals. They had derived the benefit with regard to tar; but that which accrued from the manufacture of sulphate had yet to come. During this half year it would, however, make itself felt favourably in the accounts. Of course, they had a great deal to complain about—every gas undertaking had. Some of the complaints were general in character, and others were particular. He could not say they laboured under any particular disabilities. Such as they had were shared with other companies. But the gas industry generally, as they all knew, suffered from some very severe drawbacks as compared with other industries which were not doing so much for the country in time of war. Take sulphate of ammonia. They were limited as to the price at which they might sell this very essential commodity; but the acid maker, who really determined the cost of the article, had been free to carry the price of acid to an extraordinary figure. Gas undertakings were only permitted to charge much the same as they obtained before the war; while the acid maker had been allowed to increase his price enormously. Another thing they had to grumble about was the quality of the coal received. It certainly did seem uneconomical in these days that a great deal of what purported to be coal should be perfectly useless for the purpose to which they put it. Much of what was coming through now was simply earth or dross, slate, and useless matter; and one could not help thinking that, however great the stringency of labour might be, it would pay to prepare the material a little before it was allowed to further overload the already overloaded transport system. Again, in regard to coke. He did not think that the policy of fuel control in the Metropolis and the adjoining areas had been very happy in its effect, which had been to create very large stocks of coke in the gas-works of the Metropolis, which the consumers were willing to take and use. This meant that far more coal had to be brought down over the railway lines, which might have been avoided by allowing the normal distribution of the supply that the consumers were perfectly well accustomed to. There was yet another effect. The coke that could not be sold in the Metropolitan area had been carried down to the country—thus laying another duty on the over-taxed transport—and there sold in competition with ample stocks of coke for the local requirements. This was unfortunate. But one could go on indefinitely touching upon their troubles. They had got over them; and though no doubt there were a lot more to come, what they were grumbling about to-day would be ancient history to-morrow. He concluded by moving the adoption of the report and accounts.

Mr. A. F. PHILLIPS (the Deputy-Chairman) seconded the motion, which was at once unanimously carried.

THE DIVIDENDS.

The CHAIRMAN then moved: "That the sum of £1645 16s., less income-tax, for the payment of the half-year's interest on £65,832 5 p.ct. preference stock, be set apart, and that the same be paid accordingly; and that a dividend at the rate of 12½ p.ct. per annum on the "A" stock, and at the rate of 9½ p.ct. per annum on the consolidated stock, for the half year to Dec. 31, 1917, subject to income-tax, be, and is hereby, declared payable." He pointed out that the dividend depended on the price of gas, and said the proprietors would be gratified to know that at present the Hornsey Gas Company were selling the cheapest gas in the whole of the Metropolitan area. This was a very fortunate thing for them as a Company; and it reflected itself in the dividend.

Mr. J. M. MILES seconded the motion, and it was agreed to.

GOOD SERVICES RENDERED.

The CHAIRMAN, proposing the re-election of the retiring Directors (Mr. A. F. Phillips and Mr. J. M. Miles), remarked that very much of what he had said, so far as it reflected what was creditable to the working of the Company, was due to their colleague Mr. Arthur Phillips. He need not impress upon the proprietors what a great advantage it was to the undertaking that it should have the advice and guidance of Mr. Phillips, with his mature experience and exceptional position as a consulting engineer. The results of his work spoke for themselves. Mr. Miles, too, had had very considerable experience of gas administration, and brought calm common-sense and shrewd judgment to the deliberations of the Board.

Mr. G. W. CAREY seconded this; and it was carried.

The retiring Auditor (Mr. H. A. Floate) was re-appointed, on the proposition of Mr. H. P. BODKIN, seconded by Mr. HAWES.

Mr. PHILLIPS said he would like to propose a vote of thanks to the Engineer and General Manager (Mr. J. W. Buckley), the Secretary, and all the members of the staff, for the very good services they had rendered during the past half year. He had paid several visits to the works, and could testify to the excellent order in which they were always maintained. He thought that the prosperity of the Company was in a very great measure due to the first-rate carbonizing results which were obtained by Mr. Buckley, and to the firm control which he at all times exercised over expenditure. If they went through the accounts, they would find that the expenditure at Hornsey was as economical as with any company in the kingdom. It was these things which had enabled the Chairman to say that day that the Hornsey Company were selling gas at the lowest price of any Metropolitan Company.

Mr. F. H. JONES, in seconding, said it "made one's mouth water" to go into a gas-works like those at Hornsey, where there was not only enough plant to carry on with, but the plant was in very good order. The works were in tip-top condition; and this was due to Mr. Buckley and his assistants. No company could be better served by its officers.

The resolution having been cordially passed,

Mr. BUCKLEY, on behalf of himself and his brother officers, said they felt exceedingly grateful for the kind remarks that had been made. He had always felt that if he had one ambition stronger than another, it was that the technical men on the Board should be able to point to Hornsey, not perhaps as the best-managed works, but as one of the best-managed works, in the Metropolitan area; and, without egotism on his part, he could say he believed he had attained this result.

Mr. F. J. BANCROFT said the management of the Company was in very good hands; and if they could not be better served by their officers, the same thing was equally true of the Directors. He had been particularly pleased to hear the Chairman's remarks with reference to the coke control. If Mr. Paddon could bring his views to bear upon the Coal Controller, and get the restrictions on coke removed, so that people could obtain and use it without trouble, he would be doing a very great service to the gas industry. If every consumer would burn a ton per annum, it would relieve the gas-works of all their coke. The industry ought to ask to be unfettered in this respect. It was to the interest of everybody that coke should be locally consumed in place of coal. He moved a hearty vote of thanks to the Chairman and Directors.

Mr. BODKIN seconded this, and it was passed.

The CHAIRMAN, in acknowledgment, said he wished he saw some reasonable prospect of effecting what Mr. Bancroft suggested; but it seemed that the Coal Controller refused to hearken to the voice of the charmer, charmed he never so wisely.

DERBY GAS COMPANY.

The report presented to the annual meeting of the Company last Friday stated that the past year had been one of great anxiety, owing to restricted coal supplies, shortage of labour, and difficulties in obtaining materials. The sales of gas for the year ended Dec. 31 showed an increase of more than 18 p.ct. over the previous year, due to an unprecedented demand for munitions and industrial purposes. The Litchurch works are being extended to enable the Company to meet the increase in demand. The Directors recommended the payment of the standard dividend on the consolidated stock, at the rate of 5 p.ct. per annum for the half year, with an additional ½ p.ct. for the whole year, making 5½ p.ct., less income-tax. The accounts showed that the cost of the manufacture of gas was £171,897, of which £121,977 was spent on coals, carriage, loading, and unloading charges, £11,580 on wages and gratuities, and £33,076 on repairs and maintenance. Other items of expenditure included distribution £29,037. The total expenditure was £210,685. On the receipts side were: Sales of gas, £138,375; rental of meters, £6667; rental of stoves and fittings, £6943; residual products, £95,935. The profit for the year was £38,773.

The CHAIRMAN (Alderman J. W. Newbold), in moving the adoption of the report, said the Directors were able, despite the difficulties of the time, to record an uninterrupted supply of gas. There was an increase in the quantity of gas sold of 195 million c.ft., due to the heavy demand by munition works. They regretted that, in consequence of war conditions, they were unable to take on, as they would have liked, all the new business offered, and were compelled to ask consumers as far as possible to postpone additions to their appliances, as firms engaged on war work must of necessity receive first consideration. The large increase in the demand (which was a record) had severely tested their resources—especially at the periods of maximum output. He thought they had every reason to congratulate themselves upon having done so well. The Litchurch works were being extended; and it was hoped that next winter the new plant would be completed and brought into successful operation, and so enable the Company to meet all probable requirements. For many years the Directors had exercised the greatest prudence in respect to capital expenditure; and their strong financial position to-day was due to the small capital employed as compared with the extent of the business. The total capital expenditure, including the nominal increase by conversion, now stood at £600,916, which gave £472 per million c.ft. sold—a low figure for well-equipped and up-to-date works like theirs. The average price of gas was extremely low. It was with special satisfaction that he referred to the aggregate net amount received during the year for residual products—£95,936, as compared with £82,185 in 1916. This increase was doubly welcome at a time when expenses in all directions had gone up by leaps and bounds. It was specially gratifying to the Board, as for many years they had given great attention to the more profitable utilization of those secondary products which now formed so large a proportion of the revenue.

The report was adopted; and the standard rate of dividend of 5 p.ct. was declared, with an additional ½ p.ct. It was decided to increase the remuneration of the Directors from 1200 guineas, at which it had stood since 1906, to 1600 guineas.

A Coal-Saving Calculation.—Writing to the "Yorkshire Post," a correspondent says that there are about 8,000,000 houses in the United Kingdom using gas for lighting purposes, and that if each householder would sacrifice the use of one ordinary gas-burner one hour per night, a saving of 23,000 tons of coal would be effected in one week, or over 500,000 tons during the winter season.

Limerick Gas Price and Reserve.—In accordance with the suggestion of the Local Government Board for Ireland, in their recent strictures on the management of the Limerick Gas-Works, the Corporation have adopted a resolution to apply to the Board for a Provisional Order to amend sections 27 and 40 of the Gas Act of 1873, with the objects of enabling an increase to be made of 1s. per 1000 c.ft. in the price of gas, and of providing a reserve fund of £7000.

BOURNEMOUTH GAS AND WATER COMPANY.

The Ordinary General Meeting of the Company was held last Friday, at the London Offices, No. 90, Cannon Street, E.C.—Mr. WILLIAM CASH, F.C.A. (in the absence through indisposition of the Chairman, Mr. G. Crispe Whiteley), presiding.

The SECRETARY (Mr. H. A. Plumb, F.C.A.) read the notice calling the meeting; and the Directors' report and the accounts were taken as read.

THE ABSENCE OF THE CHAIRMAN.

The CHAIRMAN, in moving the adoption of the report and accounts, said the first thing he had to do was to apologize, with very great regret, for the absence of their Chairman, Mr. Crispe Whiteley. As the proprietors all well knew, Mr. Whiteley always took a very keen interest in the Company, of the progress and proceedings of which he was greatly proud. He was a regular attendant at all their Board meetings; and it was with sorrow that his colleagues learned he was unwell, and unable to be present at this meeting. He (Mr. Cash) was sure the proprietors would wish him on their behalf to send to Mr. Whiteley a message of sympathy and regret at his enforced absence, coupled with the hope that he would soon be completely restored to health, and be with them again.

SALIENT FEATURES OF THE ACCOUNTS.

In the report, the Directors had endeavoured to show the proprietors what had been the position of the Company during the half year. The first paragraph dealt with the demand for gas; and he might point to one or two figures in the accounts to show what had been the effect on the Company. They had had to meet a very largely increased demand for gas. The receipts on the credit side of the revenue account exhibited an increase of about £30,000 compared with the corresponding period of 1916. Of this sum, half was due to an advance of 6d. in the price of gas. As against this additional income, coal had cost more by £31,256; and of this they had only been able to recover from residuals an extra sum of about £4800. Thus the net price of coal for the half year was (in round figures) £26,400 more than in the comparative half year. Included in the receipts was an item of £2259 for power gas used on the works; and for this, in effect, they had, of course, to bear the corresponding expenses on the other side of the account. The water-rental was down. It showed a decrease of about £800.

A NOTABLE INCREASE IN GAS DEMAND.

When he came to quantities, the figures were even more striking, because in the half year they had actually supplied 75 million cubic feet of gas more than in the December half of 1916. This was equal to an increase of 13½ p.ct. If they compared the whole of 1917 with the year 1914, the total supply had risen from 1017 million cubic feet to 1262 millions, or an increase of 25 p.ct.; and it should be remembered that these figures were arrived at after a considerable decrease in the demand for gas for public lighting. The proprietors would not be surprised, therefore, to learn from the report that the Company's manufacturing resources had been seriously taxed. And he need not tell them (because it was common knowledge) that at the present time capital expenditure for providing new and additional works was quite out of the question for various reasons. The Treasury would not allow them to spend money in this direction; and it would be undesirable to raise capital now even if permission could be obtained. Therefore the Directors, with great reluctance, had to revert to the old Bourne Valley works; and it was fortunate that they had these works to go to. The process of manufacture there was, however, uneconomical. There was no machinery upon the works as at Poole for economically handling the material; and they had had to patch up the plant to add to the power of production, in order to meet the demand for gas. In the current half year, they would have to do more work of a similar nature, in order to enable the Company to meet the demand that would be made for gas next winter.

INFERIOR QUALITY OF COAL.

In common with all other gas undertakings, they had suffered from the inferior quality of the coal supplied. As the chairmen of various gas companies had been telling the shareholders the last week or two, the matter of control was now very largely out of the hands of Directors, and was dealt with by the various Government Departments concerned. One rather serious factor they had had to meet was an increase of 2s. 6d. per ton of coal, which was put upon them by the Coal Controller last autumn. The effect of this upon their expenditure had not yet been fully felt; but it would soon be. Gas companies were affected in various ways. At Bournemouth, as the proprietors were aware, their principal works being at Poole, they were dependent very largely on seaborne coal; and the rise in freight had been enormous. The freight contract was now being revised; and they anticipated having to pay during the current half year a freight of something like 25s. 6d. per ton, as compared with 3s. 6d. before the war. The advantage of the Poole works being on the water side, as compared with the Bourne Valley works, which had no direct water carriage, was thus nullified.

CONTROL AND GOVERNMENT WORK.

The quality of the coal had been reflected in the quality of the gas; and the Company were now supplying an article to their consumers of a quality which was practically determined for them by the Government, who demanded that they should assist them by the extraction of certain constituent parts of the gas. Control did not end there. The Government regulated dealings in their tar, and fixed the price of sulphate of ammonia. Mr. Whiteley had told the proprietors on other occasions of the nature of the work that the Company had been doing for the Government Departments; and in their particular case they were doing work which did not fall to the lot of most other gas companies, though he could not specify it in greater detail. Why he alluded to this matter was because the bulk of this work was not really remunerative to the Company. There was in some people's mind an idea that the work gas companies were carrying on for the Government resulted in large profits. It was nothing of the sort. They were doing the work because they were asked to do it; and because they believed it was their duty to do it.

LABOUR AND WAGES—WOMEN WORKERS.

A few words on the question of labour. Their sympathies went out to their employees at the front. They were not an inconsiderable number; and the Company fervently hoped the day would come when these men would return to their duties with them. The Company were on good terms with their men. They had many loyal men who had stuck to them well, and had carried out their duties with the utmost good will. He said that they had stuck to the Company well, because they did it in spite of the temptations to leave the Company for other employment which had certain attractions in the shape of extraordinary pay—pay higher than the Company had been giving in the past. But he sometimes thought the workmen did not fully appreciate the difference between the increased pay they could get temporarily elsewhere and the continuous employment they enjoyed while they remained with the Company. The Directors had granted what they believed to be, and what undoubtedly were, substantial increases to the men; but there was now an application for a general increase in the remuneration. At the instance of the men's representatives, the matter had been referred to a Government authority, and would shortly be dealt with by them. The seriousness of the position was that, if these further increases were granted, the Directors could only take one possible course, and that was to further advance the price of gas. They could only pass on to the consumer the charge which was put upon them in this way. As he had said, a Government Department would decide the matter; and in one respect this was not to be regretted, because the question would be determined entirely by an independent tribunal. These continued additional demands of labour might perhaps be best described as a "vicious circle," because as the increases were granted—not only in the case of gas-works, but other businesses—they must be passed on to the consumer. The Company had every sympathy with their workpeople. They knew their men were living in difficult times, and that the expense of living was higher. But the fact that the expense of living was higher was caused, in no inconsiderable measure, by the increase of wages—not only in the gas, but in other industries. The Company had been able to avail themselves of women labour, and had now 250 women employees. They came to them inexperienced. But they were improving; and the Company were grateful to them for what they were doing.

THE CONSUMERS AND NEW CONDITIONS.

Having mentioned, in connection with the water department, that the Company had given a full supply during the half year, without any increase of the charges, the Chairman said that, speaking generally of their work, the Company recognized that they were carrying on this business as trustees for the consumers, in the sense that it was their duty to supply the town with the best possible of their commodities. The increase in the price of gas was, of course, inevitable, and a matter beyond their control. So far they had had to increase the price by 1s. per 1000 c.ft.—from 2s. 6d. to 3s. 6d., which latter was the price ruling last half year. But the justification for this was seen in one item alone. The net increase in the price of coal compared with the June half of 1914—the last pre-war half year—was 14½d. per 1000 c.ft. of gas. This took no account whatever of the increased cost of material or labour; so that he thought the consumers ought to feel the Company had done their best to meet the situation by economizing in other directions. So great had been the tax upon the Company's resources that they had appealed to the consumers to economize in the use of gas; and they had also asked them to assist the Company by using coke. They had had, he regretted to say, to refuse to supply more new stoves, save for munition work or hospitals. He was afraid they had somewhat taxed the patience of their consumers; but he thought they would have some sympathy for the Company, just as the Company sympathized with them in the inconvenience to which they had been put.

PROSPECTIVE POSITION.

Concerning the future. The price of gas, of course, would depend upon the costs of coal and labour. The Directors were contemplating no extensions at the moment. All they were doing in this respect was to give the matter their consideration, so that they might deal with it when the time came. The demand that would come upon them in the *post*-war period would, they believed, be still greater than it was now. Building had been suspended; and there was at present no considerable volume of public lighting. These were conditions which would change with the end of the war; and the Directors had to keep them in view. In regard to other matters, with so much under control they did not anticipate any immediate substantial change.

THE DIVIDEND AND THE CARRY-FORWARD.

As to the dividend, this was governed by the sliding-scale. They were therefore only able to recommend a dividend at the rate of 13 p.ct. per annum on the original shares, which was 1 p.ct. less than it was in the previous half year, and substantially less than it was in the period before the war. The dividend on the "B" ordinary shares was at the rate of 7 p.ct. per annum. Including the 6 p.ct. on the preference shares, the dividend would absorb £20,108, and leave about £1600 less to carry forward (£19,555) than was brought into the account.

A TRIBUTE TO THE ACTING GENERAL MANAGER.

He should like before concluding to pay a tribute to Mr. Moon, their Acting Engineer and General Manager. He had had a time of great stress and anxiety in keeping-up the supplies of both gas and water to the district; and he had had continual worries with regard to the supplies of coal and oil. In addition, there had been difficulties with regard to labour—both in securing sufficient men, and in considering what was right and proper in the way of increasing the wages from time to time. He had also been faced with considerable congestion of the works due to the large amount of business with which they had had to deal; and he had had to be in constant conference with various Government Departments. He was also frequently in request by the local authorities. Upon all this, he had during the half year suffered from quite a serious illness, and had had to have an operation for appendicitis. Personally, he (Mr. Cash) was enormously struck with the pluck and determination with which Mr. Moon met all these things.

Even when laid aside, his recovery was remarkably quick. Of course, on top of all these matters was the great responsibility which largely rested upon his shoulders in respect to maintaining the gas and water supply for such a large and important town as Bournemouth and the neighbourhood. He congratulated Mr. Moon upon what he had been able to do; and the Board appreciated it very much.

The Rt. Hon. Sir DANIEL F. GODDARD, M.P., in seconding, remarked that these were not, of course, good times for gas undertakings. Although not called "Controlled Establishments," gas undertakings were largely under the control of the Government in one way or another. They controlled the price of coal; and so far as seaborne coal was concerned, they still further controlled it by fixing definite rates of freight. Then they controlled, to a very large degree, the sale of residuals, on which normally gas undertakings relied a good deal for getting back the extra cost of coal. Take tar, for instance. For a long time no pitch was allowed to be exported to the ports of France; and so down went the price. The Government now permitted a certain quantity to be exported, and so tar had improved in price. Then there was sulphate of ammonia, the price of which to the farmers and agriculturists was fixed. He was not complaining, because in times of war the Government should take control of a large number of things. But he was showing how this control affected undertakings like their own. Another matter which touched upon the question of Government control was the very serious depreciation in the quality of coal. If the Government controlled coal, then users ought to be able to look to them to see that they got the quality they wanted. The proprietors would realize the importance of this when he said there was constantly found as much as 24 or 25 p.ct. of ash in the coal, which meant that they had to pay for this ash as coal. They had also to pay for the transport of the cash and for its handling on the works, which was pure waste. It took up space in the retorts, and reduced the efficiency of the carbonizing plant. It also imposed extra hard work on the men in maintaining the heats of the retorts. All this ought not to be. He thought the Government, being in control, ought to see that buyers got coal, and not coal mixed with 25 p.ct. of rubbish. He emphasized what Mr. Cash had said as to their Acting General Manager. He (Sir Daniel) could speak very sympathetically. As an old gas manager himself, he knew something as to the trials and anxieties of the control of a gas undertaking, although his experience, of course, had been nothing comparable with those of men who had to manage gas-works in these times. He congratulated Mr. Moon on the way he had coped with the extraordinary duties that had fallen upon him.

Mr. CHARLES WEBB remarked that, from what had been said, it seemed to him that the Government had a very strange way of showing their gratitude for the excellent services gas undertakings rendered them. It seemed to him that it was a downright scandal that the Government should treat industrial concerns in this way. He thought strong representations should be made to them about the inferior quality of the coal. He should like to hear some comparative figures as to the production of gas per ton of coal.

The CHAIRMAN said the make had dropped about 1200 c.ft. in the past half year compared with the corresponding half of 1916. He did not, however, say this was entirely due to the coal; it was partly owing to the want of sufficient efficient labour. Under the Coal Controller's redistribution scheme, too, the Company had to take a larger quantity of Somerset coal than they would have taken in the ordinary way. Continual complaints were made by the Company as to the quality of the coal; and representations had been made in regard to the subject by the National Gas Council.

The motion was unanimously carried.

THE DIVIDENDS.

On the proposition of Sir CHARLES JESSEL, Bart., seconded by Lieut.-Col. CHARLES L. MORGAN, C.B.E., the statutory dividends were declared at the following rates per annum, all less income-tax: On the preference shares 6 p.ct., on the "B" ordinary shares 7 p.ct., and on the original shares 13 p.ct.

THE RETIRING DIRECTORS AND AUDITORS.

On the motion of the CHAIRMAN, seconded by the Rt. Hon. Sir DANIEL F. GODDARD, Lieut.-Col. Morgan, one of the retiring Directors, was re-elected. The Chairman took the opportunity of congratulating Lieut.-Col. Morgan upon the honour of Commander of the British Empire that had been conferred upon him.

Proposed by the CHAIRMAN, and seconded by Lieut.-Col. MORGAN, Sir Charles Jessel was also re-elected.

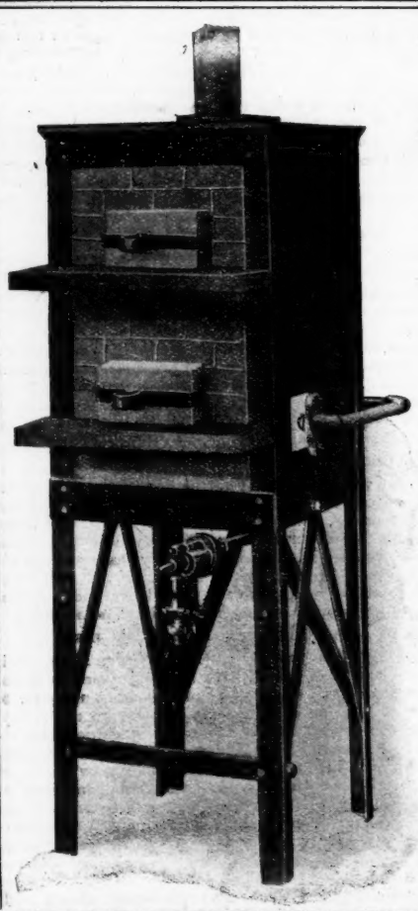
Moved by Mr. ARTHUR WOODS, and seconded by Mr. A. W. OKE, Mr. F. G. Barrett was reappointed one of the Auditors.

VOTES OF THANKS.

Proposed by the CHAIRMAN, seconded by Mr. CHARLES WEBB, and supported by Mr. W. CHAFFER, a cordial vote of thanks was passed to the officers, their staffs, and the workmen generally. The Chairman also took the opportunity of referring to the absence in India of the Engineer and General Manager (Lieut.-Col. Harold W. Woodall), in order to place on record the fact that he was not forgotten while away. They never dreamt, and none of them ever thought, when Mr. Woodall went out to India that his absence would be so prolonged. He was doing extremely good work out there; and they had nothing but excellent reports of him. He had had one important duty after another put upon him, and only the other day he was mentioned in despatches. They had at home all watched with the utmost satisfaction his various steps in promotion. They regretted he was not here; but the regret was tempered by the knowledge that he was serving his country well and efficiently. This they all knew he would do.

The motion was unanimously carried.

Mr. MOON replied on behalf of the staff and employees at Bournemouth. He remarked that, whatever measure of success had been achieved in overcoming difficulties was due to a large extent to the



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inspiration they had in serving a thoroughly appreciative and helpful Board. Not the least difficulty with which they had to contend was that of the inert material in coal; and this was a subject that could not be referred to in too strong terms. He had intended to allude to their friend and chief Lieut.-Col. Woodall; but Mr. Cash had done so. He might also mention Captain Richardson, one of their show-room attendants. He had won the Military Cross, had since received his majority, and had also had conferred upon him the French distinction of the Croix de Guerre.

Mr. PLUMB also acknowledged the vote.

On the motion of Mr. WOODS, seconded by Mr. CHAFFER, a cordial vote of thanks was also passed to the Chairman and Directors.

ILKLEY GAS-WORKERS' STRIKE.

The strike of gas-workers at Ilkley is still unsettled, after several weeks' duration. The personal element has entered into the matter, and is now one of the chief stumbling-blocks. The men will not negotiate except through their Union Secretary (Mr. E. H. Mann); and the Committee appointed by the Ilkley Council to deal with the matter intimate that they will negotiate with anybody except Mr. Mann, who, they hold, has broken faith with the Council in regard to the strike last June. A verbal agreement was come to—which has since been broken—on the undertaking that a draft agreement was to be forwarded by Mr. Mann; and the Council say this agreement never arrived, and the matter was allowed to slide, with the unfortunate results now accruing. The Council asked the local Trades' Council to act as intermediary; but the workmen have declined the Trades' Council's offer to do this.

The supply of gas for the district, all this time, is being maintained by voluntary labour—local business and professional men, Leeds and Bradford business men who live at Ilkley, and tradespeople all sharing the work. The strike involves some other departments, as well as that of the gas; and three women have been engaged in road work. The gas supply is being pretty well kept up, so as to allow a modified service. Lately the strikers have not indulged in much interference; the playful habit of overturning coal carts having been met by the chaining down of the carts' bodies to the carriage, so that they cannot be easily tipped. The few paid workers have been subjected to occasional threats; and one of them ceased work, as a result, last week. For a day or two the service was dislocated by the temporary suspension of making gas in consequence of a large iron bar having, by accident or design, found its way into a coal-hopper.

Unfortunately, owing to the limited supply of gas depriving the cookers in the middle of the day of their service, the No. 2 Military Hospital, with about fifty beds, had to be closed; but the No. 1 Hospital is maintained.

GAS FOR MOTOR VEHICLES.

The Board of Trade have issued a notice applying the provisions of the Gas (Use in Motor Vehicles) Local Prohibition Order, 1918, to the gas undertakings of the Sheffield Gas Company, the Stockport Corporation, the Stockton-on-Tees Corporation, the Portsea Island Gas Light Company, the Town of Dudley Gas Light Company, and the Tottenham District Light, Heat, and Power Company. From March 1 till further notice gas may not be taken from the works or mains of any of these undertakings for the purpose of driving motor vehicles; and no person or company who is supplying gas to these undertakings may sell or supply gas for such a purpose. Owners of motor vehicles which are kept within the area supplied by these undertakings, and who hold gas permits, may apply for motor spirit licences to the Petrol Control Department of the Board of Trade in exchange for their permits.

The Secretary for Scotland announces that he has been asked by the Petroleum Executive, with a view to securing greater economy in the consumption of petrol by encouraging the employment of coal gas for the propulsion of heavy motor-cars, to relax the regulations at present governing such cars, so as to permit the more extended use of trailers for the accommodation of gas-containers.

The Committee of the Motor Gas Equipment Association have been considering the question of standardization of filling orifices. An orifice of the diameter of 2 in. has been considered as being the most generally convenient; and this size has therefore been adopted as the standard.

The Morecambe Tramway Company's Morecambe to Heysham tramways, run on the petrol system, have suffered severely by the shortage of motor fuel; and the adaptation of the cars for gas-containers is now nearly complete.

Having "gas-bagged" their motor ambulance, the Lewisham Board of Guardians now report that during the last fortnight, while the vehicle has been run by gas, the cost has been only 18s. 4d., whereas it would have been £3 0s. 10d. had petrol been used for a similar mileage.

Wages at Burton-on-Trent.—Introducing the report of the Gas and Electricity Committee at the quarterly meeting of the Burton-upon-Trent Town Council, Alderman T. E. Lowe referred to the decision to grant the advance of 12½ p.ct. in wages to the employees and technical staff of the Electricity Department, and said that in all cases where this was not equal to the 8s. per week granted to Corporation workers generally the amount would be made up to this sum. The custom at Burton has been to regulate the rate of wages by that paid in the breweries; and this has led to the increase of 8s. a week to able-bodied men, and smaller sums to youths and girls, dating from the first pay-day in January last. This brings the remuneration of the labourers to 20s. a week over pre-war wages; while stokers and gas-fitters will get 19s. per week more than before the war.

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CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Feb.* 25.

The London tar products market continues without any particular change. Regular shipments of pitch are being made, and the price is steady at not below 50s. per ton in bulk at makers' works. In tar oils, a fair amount of business is being done on the basis of the prices arranged by the Ministry of Munitions; and a moderate demand is being made for the pitch and oil mixtures for fuel purposes. There is some inquiry for anthracene; but with little of the article available, the price is firm at 6d. per unit net, in casks, at makers' works. Solvent naphtha, 90/160, is about 4s. 3d. per gallon net and naked at sellers' works.

In sulphate of ammonia the position is unaltered, and there would appear to be no further supplies available in the London market for this season.

Tar Products in the Provinces.

Feb. 25.

The average values for gas-works products during the week are: Gas-works coal tar, 27s. 6d. to 31s. 6d. Pitch, East Coast 20s. to 25s. per ton; West Coast—Manchester 18s. 6d. to 19s. 6d., Liverpool 19s. 6d. to 20s. 6d., Clyde 19s. 6d. to 20s. 6d., nominal. Benzol 90 p.ct., North, 10½d. to 11½d.; 50-90 p.ct., naked, North, 1s. 3d. to 1s. 4d. Toluol, naked, North, 2s. 3d. Coal tar crude naphtha in bulk, North, 7¾d. to 8¼d. Solvent naphtha, naked, North, 3s. 10d. to 4s. Heavy naphtha, North, 2s. 3d. to 2s. 6d. Creosote, in bulk, North 4d. to 4¼d. Heavy oils, in bulk, North 4¼d. to 4½d. Carbolic acid, 60 p.ct. East and West Coasts, 3s. 4d. naked. Naphthalene salts, 80s. to 90s., bags included. Anthracene, "A" quality, 4d. to 6d. per unit; "B" quality, 1½d. to 2d.

FROM A MARKET CORRESPONDENT.

Tar Products.

Developments in the tar product markets and conditions are few and far between. A Heavy Oil Engine Fuel Committee has been appointed, with special reference to fuel oil supplies and the use of tar-oil as fuel in Diesel engines, particularly in relation to applications for licences to use tar-oil and of methods to adapt Diesel engines for the use of tar-oil. Tar is in demand for road purposes; but quotations do not change very much. Pitch maintains an improving tendency, and in some districts moves off almost as fast as produced. In other districts, notably Manchester, stocks continue to accumulate; but quotations are favourably affected by the better conditions elsewhere. The shipping position remains uncertain, and any great improvement is unlikely while freight rates continue to advance. The rate from the North-East Coast to France is now 75s. per ton—an advance of 10s. since October. Benzol, toluol, carbolic acid, and creosote remain under strict control, and nothing is heard of them apart from official requirements. Cresylic acid maintains its firmness, and now makes over 3s. per gallon, casks included. Naphthas are steady at late rates, and no difficulty is experienced in filling orders when once a licence has been obtained. Naphthalenes are fairly steady. The refined is not quite so dear at £30 to £32 10s., due to a falling off in the export trade on account of the difficulty of obtaining tonnage. The demand for crudes is quite as heavy; but there has been no further advance in the price of lower grades, which can be bought at £7 per ton. Better qualities make up to £15. Aniline oil and anthracene are without change. The range of quotations is as follows:

Aniline Oil (pure): 1s. 4d. per lb.

Benzol: 90% London, 1s. 0½d., North 10½d. to 11½d.; 50% North 1s. 4d. to 1s. 5d. naked per gallon.

Carbolic Acid: 60% East and West Coast 3s. 6d. per gallon; crystals 40% 1s. 3d. per lb.

Crude Tar: London 32s. 6d. to 35s., Midlands 27s. to 29s.; North 28s. to 30s. per ton, *ex* works.

Pitch: London 48s. to 50s. f.o.b.; East Coast, 22s. to 24s. f.o.b.; West Coast—Liverpool 22s.; Manchester 22s. to 23s. f.a.s.; Clyde 22s. to 24s.

Solvent Naphtha: Naked London 90-190% 3s. to 3s. 3d.; North 2s. 9d. to 3s. per gallon; 90-160% naked London 4s. 3d. to 4s. 6d.; North 4s. to 4s. 3d. per gallon.

Crude Naphtha: Naked 30% 8¼d. to 8½d.; North 6¼d. to 6½d.

Naphthalene: Refined £30 to £32 10s.; salts 80s., bags included.

Toluol: Naked, London 2s. 4d.; North 2s. 3d.

Creosote: Nominal, London 4¼d.; North 4d. to 4¼d. (Government price, 75s. per ton f.o.b.—equal to 4½d. per gallon); heavy oil, 4½d. per gallon in bulk.

Anthracene: "A" quality, 40-45%, 4½d. per unit; "B" quality, 1⅞d. to 2¼d.

Cresylic Acid: 95%, 2s. 9d. to 2s. 10d. per gallon; 97-99%, 3s. to 3s. 2d. per gallon, casks free, *ex* works London and f.o.b. other ports.

Grease Oils 18° Tw. (naked) £6 per ton f.o.r. makers' works.

Sulphate of Ammonia.

Orders have rushed in so heavily during the past few weeks that makers now report having quite sufficient business on hand to absorb the entire production of this season. Deliveries are backward, and sellers are difficult to find. A few months back farmers would hardly look at this product as a fertilizer; now the difficulty of obtaining it necessitates much economy and care in using it. In America, conditions are somewhat similar; but the shortage is due largely to the trouble in connection with fuel transport. The output there is at present only about four-fifths of the capacity. Prices remain high.

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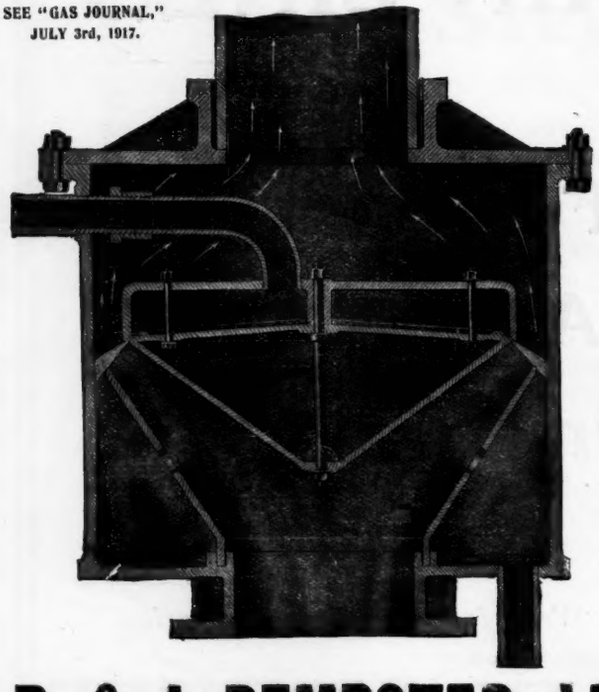

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Standard Price of Sliding-Scale Companies.

In the course of some remarks on the sliding-scale, and the need for revision owing to war effects, Mr. Alfred Proctor, the Chairman of the York Gas Company, told the proprietors at the annual meeting that the National Gas Council recently requested sliding-scale gas companies to supply certain information, and 83 companies responded. It was found that the average standard price of these undertakings was over 3s. 9d. per 1000 c.ft. In 1877 the people of York were obtaining gas at 2s. 6d. per 1000 c.ft.; so they would see how favoured York had been in respect of price. In 1912, when the standard price was fixed, the exceedingly low figure of 2s. 3d. was granted, which was less than two-thirds of the average given. The Company felt they were then very hard-pressed, and that they did not receive adequate recognition of the excellent service rendered; for the standard price of 2s. 3d. without a neutral zone was the lowest on record. Take another comparison of actual gas charges, as the result of an inquiry made of all undertakings, of whom 216 responded. At the outbreak of war, out of these 216 undertakings, comprising maximum companies, sliding-scale companies, &c., only 20 had an actual price of 2s. 1d. or less, and 136 had an actual price of 2s. 7d. or more; while in York the price was then 2s. 1d. Since the commencement of the war, it had never been more than 2s. 7d. Another striking fact was that from 1884 to 1916 inclusive (a period of 33 years), the price charged in York was never more than 2s. 3d.—a figure which had at all times borne the most favourable comparison with other places.

Chester United Gas Company.—At the recent half-yearly meeting, the Directors reported that in September the coal re-distribution scheme came into operation, and supplies of coal purchased from Yorkshire and Lancashire collieries were superseded by supplies from collieries in the North Wales coalfield. The yield of gas per ton of coal from the new source of supply was considerably less than that from the coals previously purchased, and their general character was different, necessitating alterations in the working methods and adjustment of the plant in the retort-house. The price of coal was increased 2s. 6d. per ton from September; and to help in meeting the greater cost thereby involved, the charge for gas was raised from 2s. 11d. to 3s. 2d. per 1000 c.ft. (subject to discount). Subsequently it became necessary to make a re-arrangement in the wages of the whole of the employees, commensurate with present day rates and conditions; and this has involved a further heavy additional expenditure, which will probably necessitate another increase in the price of gas. In the circumstances, the Directors considered the accounts satisfactory. The balance of profit for the half year transferred from revenue account was £4653; and after providing for interest on the debenture stock and dividend on the preference stock, and bringing in £1000 from the reserved fund account, there was a balance of £4164 to the credit of net revenue account, out of which the Directors recommended a dividend on the ordinary stock at the maximum rate of 5 p.ct for the year.

Gas Supply in the Tottenham District.

The reply of the Board of Trade to representations made by the Tottenham District Council as to the supply of gas in the area covered by the Tottenham and District Light, Heat, and Power Company [*ante*, p. 257] was submitted to the Council at their meeting last Tuesday. It will be remembered that the Board, in refusing to sanction the holding of a local inquiry as requested, were satisfied that the Company were doing everything in their power to remedy the existing conditions. The Public Health Committee presented a report stating: "We are by no means satisfied with this reply, in view of the prolonged failure of the Gas Company to carry out their obligations to consumers." . . . There has admittedly been a very serious deficiency of calorific value, which, as the Council are aware, is of the utmost importance to consumers at the present time. . . . As a result of the Council's representations to the Board of Trade, the Company have undertaken to renovate their works at Enfield, which for some time past have been out of commission. Should there be any undue delay on the part of the Company in fulfilling the promises made by them to the Board of Trade, we recommend that we be authorized to press for a local inquiry to be held by one of the Board's inspectors." The Council adopted this report. The claim of the Council that, as a result of their representations to the Board of Trade, the Company have undertaken to renovate their works at Enfield, which for some time past have been out of commission, is not correct. As a matter of fact, the Enfield works have been "in commission" some eighteen months.

Price of Gas at Halifax.—The Halifax Corporation Gas Committee recommend, subject to the Town Council's approval, an increase in the charge for gas of 4d. per 1000 c.ft. The necessity has arisen by reason of the advanced cost of coal and the payment of substantial war bonuses.

Weymouth Consumers' Gas Company.—An increase during the past half year in the quantity of gas sold of 15¼ p.ct., as compared with the same six months of 1916, was reported at the recent meeting of the Company. The profit made in the half year was £3014; and this, added to the balance of net revenue brought forward, made the balance of the account, after providing for interest upon the debenture stock, £9368, out of which the Directors recommended the payment of a dividend for the half year on the ordinary stock at the maximum rate of 5 p.ct. per annum, less income-tax. Owing to the altered conditions of manufacture necessitated by the requirements of the Government for the production of benzol and toluol, the Directors considered it desirable to avail themselves of the facilities of the Gas (Standard of Calorific Power) Act, 1916, and obtained from the Board of Trade an Order for a calorific value standard of 500 B.Th.U. gross. During the twelve months of 1917, the sale of gas reached 159,630,400 c.ft., and was 11,854,800 c.ft. above the output for 1916.

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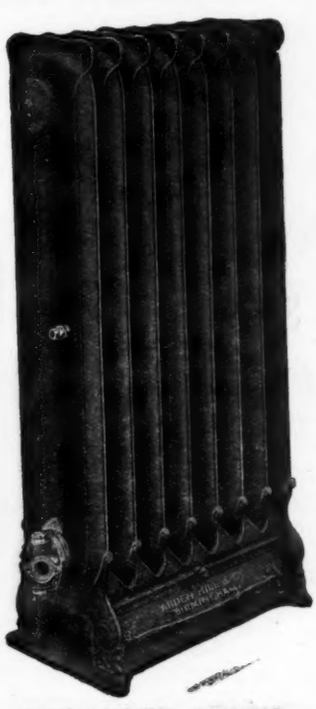

DOUBLE-COLUMN RADIATOR.

Price of Gas Reduced at York.

Good news was forthcoming at the annual meeting of the York Gas Company, when the Chairman (Mr. Alfred Proctor) said that, after a very careful survey of the position and resources of the Company, the Board had come to the conclusion that the price of gas could be reduced, and had decided to make the substantial reduction of 3d. per 1000 c.ft. If conditions did not become more adverse than they now were, they could see their way to carry on during this year with a price of 2s. 4d. per 1000 c.ft. Should anticipations prove to be justified, the saving to consumers would be upwards of £6000. Doubtless it would come as a surprise, and a very welcome one, that they should be able to make this reduction in these times. Two main considerations had influenced the decision. First, the results of operations since the price was raised had been more favourable than expected. Secondly, during the past year they began to reap the full benefit of the labour-saving machinery installed by the foresight of Mr. H. E. Bloor, the Manager. The works were now fully equipped with labour-saving machinery; and though they might not be so efficient or economical as an entirely new plant, the new machinery was the best and most suitable that could be obtained, having regard to the state of the existing buildings and plant, and under war conditions. The benefit of this to York would be appreciated, when he told them that, if the new machinery had not been put in hand at the beginning of the war, there would have been a shortage of gas during the last three winters, and undoubtedly the price would have been considerably more than it had been. Another result of the machinery was that men were released from ordinary gas-making operations; and the Company had thus been enabled to effect many long-delayed and much-needed repairs and renewals to the plant. The result was that this year they would not—unless something unforeseen happened—need to make so large an outlay on the plant. The greatest credit was due to Mr. Bloor for his foresight and energy, by reason of which the Directors were enabled to render an account of their stewardship which would be received with satisfaction. The sale of gas in the past year showed a good increase. Dividends were declared at the rate of 4 p.ct. per annum upon the preference stock and £3 12s. p.ct. per annum upon the consolidated ordinary stock. At a subsequent special meeting, the proprietors sanctioned the Bill which the Company are promoting for relief from financial hardships.

Barnstaple Gas Company.—The annual meeting of the Barnstaple Gas Company was presided over by Mr. C. E. R. Chanter. The report stated that £1925 stood to the credit of the profit and loss (net revenue) account; and it was proposed to declare a balance dividend (less income-tax) of 4½ p.ct. on the "A" and £3 3s. p.ct. on the "B" shares, making totals of £9 and £6 6s. p.ct. respectively—the maximums payable with gas at the present price. The Chairman said the total income was £12,153, compared with £11,836 in 1916; the expenditure being £10,793, against £7884. The profit for the year was £1720. There would be a sum of £1348 to be carried forward.

Drastic Order for Economy of Fuel in the United States.

An order for five days' industrial shut-down, followed by nine idle Mondays, prepared by Mr. H. A. Garfield, Government Fuel Administrator, has been approved by President Wilson, and came into force on the 18th ult., in the district east of the Mississippi, and the States of Minnesota and Louisiana. It directs priority of supply for certain uses (including public utilities); and between Jan. 18 and 22 inclusive, and on every succeeding Monday up to March 25, no fuel shall be delivered to any person or firm for purposes not covered by this list, until the requirements therein included have been fully met. No manufacturing plant is to burn or use fuel on these days, except those that must be continuously operated to avoid serious injury either to the apparatus or the contents, certain manufacturers of perishable foods, and printers and publishers of daily papers. On the Mondays, no fuel is to be burned (unless essential to prevent injury from frost) for heating business or professional offices, other than Government, railway, bank, or those occupied by medical men; for wholesale or retail stores (except for sale of food up to noon, or for drugs and medical supplies); for theatres or places of amusement, or for the sale of liquor; for supplying power for movement of surface, elevated, or subway cars or trains in excess of the consumption on the previous Sunday. Exception is made for offices used for the distribution of food; and relief for special purposes may be obtained by order of the Administrator.

Extensions at the Greenock Gas-Works.—The Gas Committee of the Greenock Corporation have agreed to recommend that £10,000 should be spent on the provision of additional plant at the Inchgreen works, owing to the abnormal demand for gas.

Coleraine Gas Supply.—At a meeting of the Coleraine Urban District Council, the Clerk called attention to the serious shortage of coal and the urgent necessity for rigid economy in the use of gas for lighting, heating, and cooking. They had found great difficulty, he said, in getting contractors to complete their contracts; and it had become a serious problem how they were to carry on the gas-works at all. The Council expressed a hope that, as they had withdrawn the public lighting, consumers would do their best to reduce the consumption of gas for all purposes; and notice to this effect is to be issued.

Merthyr Tydfil Gas Company.—At the fiftieth annual general meeting of the Company, Mr. H. F. W. Harries, who presided, stated that the Directors were much concerned at the heavy increase in the cost of all materials, &c., used in the manufacture and distribution of gas; and he referred to the great difficulties experienced during the past year. The price charged by the Company for gas was still 2s. 9d. per 1000 c.ft.; but whether they would be able to continue to supply at this figure depended mainly upon circumstances over which they had no control. Everything possible would be done to prevent an increase in price. Statutory dividends at the rate of 5 p.ct. per annum (less income-tax) on the preference and consolidated ordinary stocks were declared.

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Railway Rates for Coal Tar Products.

Towards the end of last year [see "JOURNAL" for Dec. 18, p. 565], the Railway and Canal Commission refused an application by the Traders' Traffic Conference, of Walsall, against the Midland Railway Company for a declaration that benzol, naphtha, and toluol were spirits of tar, and were comprised within Class 2 of the statutory classification of railway charges. Mr. Justice Lush said it was clear that the Railway Company were entitled to deal with them as they had done, and place them in Classes 3 and 4 as dangerous goods. The Court found that the goods were not such as could be described as spirits of tar. Last week, a further application was made on behalf of the traders, that the judgment should be so varied as not to prejudice them, as it was an order irrespective of the articles being below 73°. The Railway Company opposed the application, on the ground that the only question to be decided was whether or not these articles were spirits of tar. This was decided in the Company's favour. After some discussion, Mr. Justice Lush suggested that the whole decision would be clearer if they made two declarations as follows: Firstly, that the articles are not spirits of tar within the meaning of Class 2; and, secondly, that naphtha below 73°, and benzol and toluol were dangerous goods. Counsel agreed that this would meet the difficulty; and the Court amended the decision accordingly.

Cambridge Gas Company.

Addressing the shareholders at the half-yearly meeting of the Cambridge University and Town Gas Light Company, the Chairman (Mr. E. H. Parker) said the total expenditure of the past six months exceeded that of the corresponding half of 1914 by no less a sum than £13,192. The increase in the amount paid for coal accounted for £10,626 of this sum; while a further £2372 arose from increased wages and war bonuses. At times during the past six months great difficulty had been experienced in maintaining the supply of gas, owing to the increased demand, shortage of labour and transport, difficulty of obtaining plant and materials, and the deterioration in the quality of coal. Under these circumstances, it was necessary to appeal to the consumers to exercise the greatest economy in the use of gas. If the war continued, the problem of coal supplies promised to be still more serious next winter; one of their collieries having already notified them that their contract for this year would have to be cut down by 10 p.ct. As from Christmas, the price of gas had had to be raised from 2s. 10d. to 3s. 2d. per 1000 c.ft.; and a further rise would be inevitable. At 3s. 4d. per 1000 c.ft. the price would be the same as it was some years ago, before they took in hand the modernizing of the works, when coal was 14s. a ton, against the present price of about £1 10s. What the price of gas would have been in these days without modern methods and labour-saving machinery it was impossible to say. They were aiming, by careful working, with the very valuable assistance of Mr. J. W. Auchterlonie (the Engineer), at getting the price down to 2s. 6d. per 1000 c.ft., and had actually reached 2s. 7d.; and it is very disappointing to the Directors and to Mr. Auchterlonie—whom they were all pleased to see back in his place—to find the work of many years swept away through no fault of their own. After the adoption of the report and accounts, a dividend at the usual rates was declared.

Wages and Gas Prices at Falkirk.—Owing to the increase of wages recently granted to Falkirk Corporation employees in the Gas Department, the Town Council have resolved to advance the price of gas from the beginning of the current quarter for lighting and domestic purposes to 4s. 4d. per 1000 c.ft.; for prepayment meters, to 4s. 6d.; for public lamps and motors, to 3s. 10d.; and for power and manufacturing purposes other than lighting or gas-fires, and hotels, bakeries, and restaurants other than lighting or gas-fires, to 3s. 10d. This is the second advance in price since October last, when the rate for lighting and domestic purposes was 3s. 7d., and for prepayment meters 3s. 9d. per 1000 c.ft.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for Feb. 20.]

Nos. 2391—2807.

BALFOUR, J. W. B.—"Burners." No. 2436.

BERRY, J.—"Air and gas controlling-means for motor vehicles," No. 2567.

BLAKELEY, W.—"Stills or preheaters for dehydration of tar, &c." No. 2646.

CAMPBELL, D.—See Balfour. No. 2436.

CARE, E. R.—"Automatic self-lighting and self-extinguishing appliance for gas stoves and cookers." No. 2645.

CHRISTIE, J. H.—"Cookers, ovens, &c." No. 2612.

CROWE, H.—"Gas manufacture." No. 2489.

FREEMAN, N. H.—"Carbonizing or distillation apparatus." No. 2462.

HANNAY, J. B.—"Apparatus for obtaining mixtures of constant composition by evaporation of volatile combustibles by air or other gases." No. 2624.

HIGGINS, W.—"Portable gas-containers." No. 2419.

JACK, P.—"Method of handling solid pitch, &c." No. 2554.

KIRKE, P. ST. G.—"Gas-fired boilers." No. 2520.

LORD, J. E. C.—"Process for manufacture of fuel oil from coal-tar products." No. 2655.

MARKS, E. C. R. (Soc. Anon. Italiana G. Ansaldo & Co.).—"Gas-generating apparatus." No. 2736.

MASON, G.—"Gaseous-fuel containers for motor vehicles, &c." No. 2760.

ROBERTON, J.—"Retorts for distillation of coal, shale, &c." No. 2776.

Soc. Anon. Italiana G. Ansaldo & Co.—See Marks. No. 2736.

TAYLOR, J. E.—"Gas, &c., lighters," No. 2512.

WRAY, C.—"Gas-fires." No. 2648.

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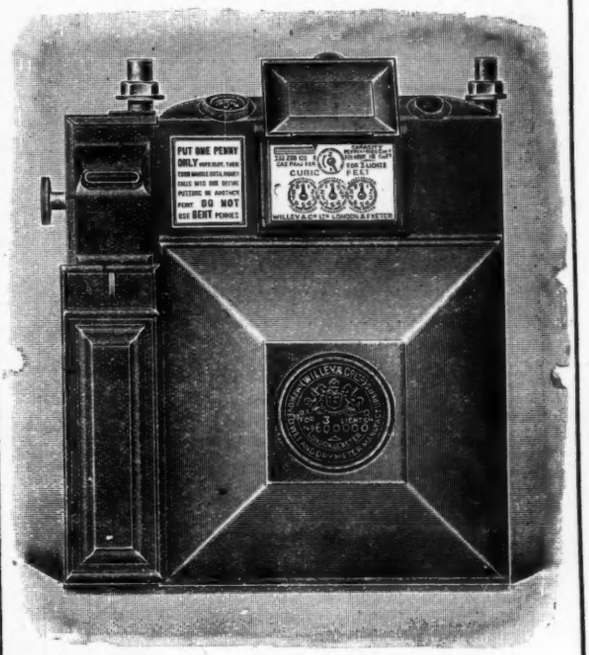

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Salford Gas-Works Assessments.—The Salford Gas Committee have given instructions that the necessary steps be taken forthwith to obtain a reduction of the assessments of the gas-works and mains within the borough, and for notice of objection to be served upon the parties concerned.

Matlock Gas Profits.—The annual report of the Directors of the Matlock Gas Company states that the profits for the past year were £3123; there was £7924 available for dividend. The Directors recommend the payment of 5s. 6d. per share for the half year, making 5½ p.ct. for the year, which will leave £4708 to carry forward. A slight increase in the price of gas was made on Jan. 1.

The Loss on the Sidmouth Gas-Works.—In moving a resolution with reference to the new rate, the Chairman of the Sidmouth District Council (Mr. Halse) said that £500 of the estimated expenditure of the ensuing half year was to make good the loss on the gas undertaking. If the Local Government Board granted the Council's application for power to increase the price of gas, the undertaking would not show so great a loss in the future. Owing to the war, only £100 was allowed for public lighting; and the expenditure was very much higher than it was in pre-war days. But if the war ceased to-morrow, and the undertaking became self-supporting, the Council would need most of the £500 for public lighting.

Bromsgrove Gas Company.—At the annual meeting of the Bromsgrove Gas Light and Coke Company, Mr. John Green, who presided, stated that the Directors had had to submit to a big advance in coals, wages, and everything connected with gas making. For the present, at any rate, there was no intention of raising the price of gas. In this respect they were quite an exception to the generality of gas undertakings. The report was approved.

Salisbury Gas Company.—In moving at the meeting the adoption of the accounts for the half year, and the payments of full statutory dividends, the Chairman said the period had been one of much difficulty and anxiety, owing to the great increase in the cost of coal, oil, labour, and all materials required. The price of gas was increased 3d. per 1000 c.ft. from Oct. 1; but at 3s. 5d. it was still cheap, and there had been an increase in the output of nearly 12 p.ct. The Board were in perfect agreement with their Engineer that additional carbonizing plant, with the most modern machinery, would have to be erected at once in order to meet the altered conditions, provided the sanction of the Ministry of Munitions could be obtained. They had to acknowledge the services of their Manager (Mr. W. Fielden), who had had a very trying time in December and January. With one-half the normal staff, the supply of gas had been well maintained; and it was a matter for congratulation that they could declare full dividends.

STOCK MARKET REPORT.

AFTER the fairly promising indication at the close of business a week ago of some improvement in the volume of business, it came as a disappointment last week to find this welcome current was dying away completely. Indeed, by general assent, it was pronounced to be one of the quietest times the Stock Exchange has had for a long while past. In spite, however, of this inanition, a gratifying feature was that no such weakening of the tone resulted, as might reasonably have been feared.

This was conspicuously apparent in the gilt-edged market, where Government securities were in high favour. In Home issues, the 5 p.ct. War Loan was not particularly strong; but the Loans carrying lesser rates of interest showed strength. Exchequer Bonds were also in demand, and choice Colonial issues were firm. Home Rails were too torpid to afford any marked characteristic, and on some days they were scarcely noticed at all. Americans were in much the same case; but Grand Trunks, after some oscillations, showed improving confidence in its relations with the Government. Argentines were less hopeful of the situation in regard to labour questions.

In the Foreign Market, there was much diversity. The French Loan quite lost its firmness of the preceding week after the opening day, and thenceforward its career was downward. Russians, as might be expected, were much let alone; but a few buyers were found to venture in at long odds. Among the rest, Brazilian and Uruguay were about the steadiest. South Africans were dull. In Miscellaneous undertakings, further amalgamation of Banks attracted investors in this class of security; but Breweries were quite dull. Rubber moved little, and Oil was irregular.

Business in the Gas Market reflected the prevailing state of things in all other departments; its quietude being, if anything, even more pronounced than in the week before. The prices of bargains recorded were for the most part quite abreast of those marked in the preceding period; but they did not afford any indication of a disposition to advance. In point of quotation, Gas Light ordinary and South Metropolitan were placed a point easier, and Newcastle and Gateshead was advanced a point.

The Money Market situation was quite easy.

Bargains done for cash during the week were as follows: On Monday, Alliance and Dublin debenture 59½, Brentford "B" 75½, Gas Light ordinary 68, 68⅜, 68½, 68⅝, ditto preference 69½, Imperial Continental 89, 89½, Primitiva preference 55s., San Paulo debenture 40⅜, 40⅝. On Tuesday, British 32⅞, Commercial debenture 52, Gas Light ordinary 68½, ditto maximum 55½, 56, ditto preference 70, ditto debenture 55½, San Paulo preference 7⅞, South Metropolitan 72½, Hornsey 4 p.ct. debenture 67. On Wednesday, Alliance and Dublin debenture 60, Brentford "A" 78, Gas Light ordinary 67½, 68, 68¼, ditto debenture 56, Monte Video 7⅞, Primitiva 35s. 6d., ditto preference 55s. 6d., San Paulo debenture 40½, 40⅝. On Thursday, European 9, 9⅛, Gas Light ordinary 67, 67½, ditto maximum 55, 56½, ditto debenture 55½, Imperial Continental 89, South Metropolitan 72, 73. On Friday, Bombay 5⅛, European 9¼, Gas Light ordinary 67½, ditto preference 69½, ditto debenture 56, 56½, Primitiva preference 55s., 56s. 3d., Bournemouth 3 p.ct. debenture 53½.

The Bank rate is 5 p.ct., as fixed on April 5.

ANTE-WAR PRICES AND DIVIDENDS, LATEST DIVIDENDS, AND LAST WEEK'S BARGAINS.

Issue. £	Share.	When ex-Dividend.	Ante-War Dividend & Bonus p.c.	Last Dividend.	NAME.	Closing Prices. July 30, 1914.	Present Prices.	Lowest and Highest Prices of Bargains.
175,472	Stk.	Mar. 10	4	4%	Aldershot 4 p.c. Pref.	..	57—62	..
1,551,868	"	April 8	2½	4½%	Alliance & Dublin Ord.	59—64	52—57	..
874,000	"	July 10	4	4%	Do. 4 p.c. Deb.	76—79	58—63	59½—60
280,000	5	April 29	7½	8/6	Bombay, Ltd.	5⅝—6⅛	5—5½	5⅛
50,000	10	Feb. 26	16	18%	Bourne-mouth Gas and Water { 10 p.c.	22—30	22—25	..
888,110	10	"	7	7%	B 7 p.c.	15—15½	10¼—11	..
115,000	10	"	6	6/-	Pref. 6 p.c.	13½—14	9—9½	..
159,740	—	"	—	4%	4 p.c. Deb.	..	67—69	..
992,045	Stk.	Feb. 26	14	14%	Brentford A Consolid.	261—266	76—79*	78
734,920	"	"	11	11%	Do. B New	204—209	73—76*	75½
55,000	"	"	5	5%	Do. 5 p.c. Pref.	109—111	79—84*	..
221,400	"	June 11	4	4%	Do. 4 p.c. Deb.	91—98	63—65	..
217,380	"	Feb. 26	11	10%	Brighton & Hove Orig.	208—213	145—150	..
244,200	"	"	8	7%	Do. A Ord. Stk.	154—159	98—103	..
530,000	20	Mar. 26	12½	22/6	British	44—45	32—33	32⅞
120,000	Stk.	June 26	4	4%	Do. 4 p.c. Deb. Stk.	88—90	66—68	..
245,771	"	"	4	4%	Buenos Aires 4 p.c. Deb.	85—87	51—54	..
100,000	10	—	—	—	Cape Town & Dis., Ltd.	1½—2½	3—3½	..
100,000	10	—	—	4½%	Do. 4½ p.c. Pref.	4—6	6½—7½	..
100,000	Stk.	June 26	4½	4½%	Do. 4½ p.c. Deb. Stk.	70—75	56—63	..
157,150	"	Feb. 26	5	5%	Chester 5 p.c. Ord.	108—110	79—81	..
1,518,380	"	Feb. 12	5/9/4	41/4	Commercial 4 p.c. Stk.	106—108	70—72	..
560,000	"	"	5⅛	36/8	Do. 3½ p.c. do.	103—105	64—66	..
475,000	"	June 11	3	3%	Do. 3 p.c. Deb. Stk.	69½—71½	52—54	52
800,000	"	"	4	—	Continental Union Ltd.	76—79	39—41	..
300,000	"	"	7	—	Do. 7 p.c. Pref.	115—118	61—63	..
278,400	—	—	—	11½%	Croydon B and C 7 p.c.	..	165—175	..
—	—	—	—	10%	Do. E	..	..	..
492,270	Stk.	—	6	5½%	Derby Con. Stk.	128—125	95—100	..
55,000	"	—	4	4%	Do. Deb. Stk.	102—104	80—88	..
1,002,180	10	July 29	10	5/0	European, Ltd.	17½—18	9—10	9—9½
16,298 975	Stk.	Feb. 10	4/17/4	37/4	Gas Light and Coke { 4 p.c. Ord.	98—102	67—69*	67—68½
2,600,000	"	"	3½	3½%	3½ p.c. max.	76—79	55—57*	55—56½
4,062,235	"	"	4	4%	4 p.c. Con. Pref.	96—99	69—71*	69½—70
4,674.850	"	June 11	3	3%	3 p.c. Con. Deb.	72½—74½	55—57	55½—56½
180,000	"	"	10	10%	10 p.c. Bonds	..	..	..
258,740	"	Mar. 12	5	3½%	Hastings & St. L. 3½ p.c.	87—89	48—53	..
70,000	10	April 29	11	6%	Hongkong & China, Ltd.	16½—16¾	7½—8½	..
86,600	—	—	—	9%	Hornsey 7 p.c.	..	115—125	..
131,000	Stk.	Mar. 12	7½	7%	Ilford A and C.	151—154	92—97	..
65,780	"	"	6⅜	5½%	Do. B	115—118	73—77	..
65,500	"	June 26	4	4%	Do. 4 p.c. Deb.	92—94	63—66	..
4,940,000	"	May 14	9	4½%	Imperial Continental	150—160	89—91	89—89½
1,385,000	"	Feb. 12	3½	3½%	Do. 3½ p.c. Deb. Red.	84—86	64—66*	..
235,342	"	Mar. 12	6½	6½%	Lea Bridge Ord. 5 p.c.	119—121	82—87	..
2,498,905	"	Feb. 26	10	5%	Liverpool 5 p.c. Ord. { A	211—218	82—84	..
					{ B	146—148		
806,088	"	June 26	4	4%	Do. 4 p.c. Pr. Deb. Stk.	..	71—73	..
75,000	5	June 11	6	2/-	Malta & Mediterranean	4½—4¾	3⅝—3¾	..
250,000	100	April 1	4½	4½%	Met. of Melbourne { 4½ p.c. Deb.	99—101	89—100	..
541,920	20	May 28	4	6/-	Monte Video, Ltd.	11½—12	8—8½	7⅞
1,875,892	Stk.	July 29	4½	3⅛%	Newcastle&Gatsh'dCon.	96½—99½	77—79	..
529,705	"	June 26	3½	3½%	Do. 3½ p.c. Deb.	82—83	60—62	..
55,940	10	Feb. 26	7/14/0	7/-	North Middlesex 7 p.c.	14—15	9½—10½	..
800,000	Stk.	May 14	8	8%	Oriental, Ltd.	117—122	103—105	..
60,000	5	Mar. 26	10	1/-	Ottoman, Ltd.	7½—7¾	2—3	..
60,000	50	Feb. 26	13	10%	Portsea, Island B	125—131	83—88	..
100,000	50	"	12	9%	Do. C	118—121	78—78	..
52,000	50	"	10	7%	Do. D	..	..	..
249,980	5	April 29	8	—	Primitiva Ord.	5½—6	1⅞—2	35/6
499,960	5	June 26	5	2/6	Do. 5 p.c. Pref.	4½—5	2½—3	55/—56/3
521,600	100	June 2	4	4%	Do. 4 p.c. Deb.	91—93	76—78	..
—	—	—	—	4%	Do. " " 1911	..	..	..
346,198	Stk.	June 26	4	4%	River Plate 4 p.c. Deb.	85—87	57—62	..
150,000	10	May 14	6	6/-	San Paulo { 6 p.c. Pref.	10½—11	7½—8	7⅞
125,000	50	July 1	5	5%	5 p.c. Deb.	47—49	40—42	40½—40⅝
185,000	Stk.	Mar. 12	10	10%	Sheffield A	228—234	..	..
209,984	"	"	10	10%	Do. B	222—224	178—182	..
523,500	"	"	10	10%	Do. C	220—222	178—182	..
90,000	10	May 28	9	6/-	South African	10½—11½	9—10	..
6,609,896	Stk.	Feb. 10	5/4/0	40/-	South Met. 4 p.c. Ord.	111—113	72—74*	72—73
—	—	—	—	—	Do. Pref.	..	93—95	..
1,895,445	"	July 10	3	3%	Do. 3 p.c. Deb.	72¼—74½	54—56	..
224,820	"	Feb. 26	8½	7½%	South Shields Con. Stk.	157—159	137—139	..
952,795	"	"	6	4½%	S'th Suburb'n Ord. 5 p.c.	114—116	76—77	..
60,000	"	"	5	5%	Do. 5 p.c. Pref.	110—112	75—77	..
135,000	—	—	—	4½%	Do. West Kent	..	..	..
187,558	Stk.	June 26	5	5%	Do. 5 p.c. Deb. Stk.	116—118	84—86	..
647,740	"	May 14	5	5%	Southampton Ord.	99—102	75—77	..
120,000	"	Feb. 12	7½	5½%	Tottenham { A 5 p.c.	135—138	92—97	..
782,275	"	"	6	4%	District { B 3½ p.c.	115—117	70—72	..
181.355	"	June 26	4	4%	4 p.c. Deb.	87—89	61—63	..
182.380	10	Dec. 30	5	—	Tuscan, Ltd.	5—6	1—2	..
149,900	10	July 1	5	5%	Do. 5 p.c. Deb. Red.	93—95	60—65	..
236,476	Stk.	Mar. 12	5	5%	Tynemouth 5 p.c. max.	108½—109½	89—91	..
					Wandsworth, Wimbledon, and Epsom—			
30,000	"	Feb. 26	8⅜	72/6	Wandsworth A 5 p.c.	151—156	113—117	..
255 636	"	"	6½	57/6	Do. B 3½ p.c.	129—134	97—99	..
108,075	"	"	5/17/3	50/9	Do. C 3½ p.c.	110—115	84—89	..
359,000	"	"	6½	51/3	Wimbledon 5 p.c.	117—122	85—90	..
98,000	"	"	6½	57/6	Epsom 5 p.c.	121—126	93—98	..
88,416	"	June 26	3	3%	3 p.c. Deb. Stk.	66—69	49—52	..

* Ex Div.

GAS J... H. & J. DEMPSTER, LTD., 34, Victoria St., S.W. 1. MANCHESTER. KENTISH TOWN, N.W. H. MITCHELL, FOR PATENT SLOT METER PAD & OTHER LOCKS.